Cascade® *Elite*

Advancing medical technology to help you, help others.

Experience The Cadwell Difference – Since 1979

The benefits of owning a Cadwell system are numerous. Our development team understands and delivers what you need. Everyone at Cadwell stands behind our products, and we all have the same goal - to keep you as a loyal, devoted customer long into the future.

Innovative Neurodiagnostic Instruments

John Cadwell, BSEE, MD designed the first microprocessor-controlled EMG instrument. In 1979, he and his brother Carl, DDS, formed Cadwell Laboratories, Inc. and began selling their device. Since then, Cadwell has been a leader in the development and manufacture of innovative and reliable instruments for neurophysiology. Many of these instruments have been providing decades of service to their owners.

Numerous patents are held by Cadwell, including those for magnetic stimulators, cable shielding designs, neural network analysis of EEG, and database designs. Today, still located in Kennewick, Washington, John and Carl continue ownership of the company and come to work everyday to develop and market products ranging from EMG to EEG to PSG to IONM instrumentation and more. Cadwell has a firm hold of its identity and a dedicated focus on neurophysiology.

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Setting the Standard in IONM.

The 32-Channel Cascade Elite was designed and built from the same platform as the best selling Cadwell Cascade, so you know the performance and reliability are there. Flexible placement options allow you to adapt to any surgical setting. The hardware is extremely rugged, yet it's still highly portable and easily transported. The software is intuitive and very user friendly with all the features (and more) you need to excel in the OR.

Come stand above the rest.

Cascade Elite
32-channel amplifier.
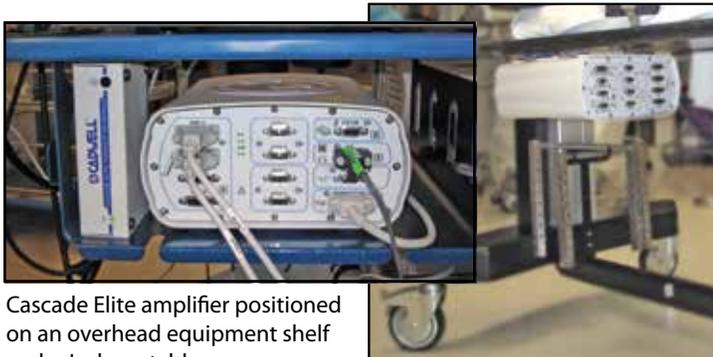
Features of the Cascade Elite

- 32 channels and 64 inputs
- All-modality monitoring
- Robust and reliable hardware
- Industry-leading service support Cadwell has long been known for
- Low total cost of ownership
- Base can be located near the patient, on bed, IV pole, equipment shelf or Jackson table
- Water resistant base unit (rated to IP64)
- Patented shielding technology in amplifier input extender cables for improved noise rejection
- Patented quick-connect cable fasteners speed setup & teardown
- tceMEP stimulator with four configurable output channels (TCS-4)
- Nine electrical stimulator boxes to choose from including the new Biphasic ES-IX 2
- Intuitive and easy to use software that's fast to set up and simple to learn
- Remote monitoring for viewing and review of data independent of unit in surgery
- Sixteen unique data-window types
- Up to 20 user-programmable data-window views
- Automatic report generator
- Automatic interleaving
- Automatic train-of-four testing
- Video software with auto-capture and multiple input support

Cascade Elite amplifier positioned on the table base and on an IV pole.

The power/com module supplies system power and communication between the base unit and the computer giving you unprecedented flexibility when positioning yourself and your equipment in the room.

Cascade Elite amplifier positioned on an overhead equipment shelf and a Jackson table.

Versatile System Configurations

The Cascade Elite is available as a portable or cart-based system. For mobile users, the rugged hardware stands up to the rigors of being transported. All the components fit easily into our carry-on size rolling case for ease of travel. The case has smooth rolling wheels, a durable handle and looks professional. The optional laptop bag allows you to breeze through airport security and the optional accessories duffle bag is perfect for electrodes. Whether you're taking your Cascade Elite across the hall, across town or across the country, be assured that it will perform flawlessly.
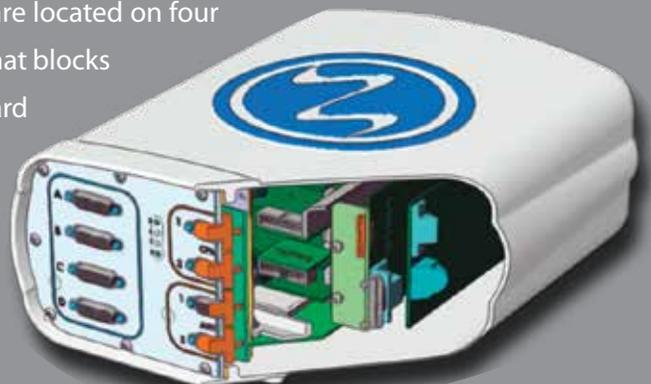
Easy Positioning

The Cascade Elite base unit can be placed near the patient, allowing you to position yourself where you can give the best patient care. The equipment no longer dictates where you sit. We've provided a variety of unique options that allow you to place the Elite to best fit the room set up that day. By keeping the base unit close to the surgical bed, cable lengths are reduced, improving signal quality and reducing noise. Just one cable runs across the floor from the monitoring station to the base unit for improved reliability and less damage to cables.

Reliable Hardware

The Cascade Elite is the most durable and long lasting instrument on the market. We combined many functions into the base unit to allow for fewer cables and cable connections, which results in reduced potential failure points, less downtime and lower repair costs. The base unit is solid aluminum and houses all amplifier and processing functions in a water resistant enclosure with water resistant connectors (rated to IP64) protecting internal components - even if the base unit is drenched. The 64 amplifier inputs (32 channels) are located on four 16-input extender pods with our patented shielding technology that blocks noise from a wide variety of sources. Reinforced internal circuit board mounting chassis for extreme durability even in the harshest environments.

Stimulator Options

ES-IX 2

The ES-IX 2 represents a dramatic shift in Cadwell's line of electrical stimulators.

- 8 high current (0-100 mA) outputs
- 1 low current/voltage output that is software-configurable to 5mA/20mA constant current or 5V/20V voltage
- Two stimulators can be daisy-chained
- Reverse polarity, rapid trains, and current sensing available for all outputs
- Biphasic stimulation
- Built for durability. Dropped 500 times at one meter without a single failure.

TCS-4

The TCS-4 is a transcranial motor stimulator with four user-selectable outputs.

- Delivers high voltage, rapid trains of up to 9 pulses (all delivering up to 1000 V)
- Place multiple TCeMEP stim montages and utilize the one that evokes the best response

EP Stimulators

- Auditory stimulators include insert earphones and headphones
- Visual stimulators include flash goggles and LED pad

Legacy Stimulators

- All ES-5 and ES-16 stimulators still work with the Cascade Elite
- EP and EMG stimulator choices include stimulators with low intensity outputs of 5 and 20 mA and up to 15 high intensity outputs.

Peripherals

ES Detector module

The ES Detector module and clip prevent electro-surgery noise from contaminating your EMG and EP recordings. Simply attach the clip to the leads of the electrosurgical hand piece and turn on the appropriate options in the software. When the surgeon uses the electro-surgery device, the system mutes EMG audio, prevents the system from storing electrosurgical noise in the EMG, pauses the EMG stimulator if it's in use, and pauses EP modes.

Noise Detect Probe, 200EP Inductive Amplifier

This device allows the monitorist to quickly locate sources of noise in the operating room and make the necessary adjustments to avoid it.

Multi-Stage Clip-On

Multi-Stage Clip-On style lead wire has a 1.5mm touch-proof connector and auto adusting crossover wire form that is ideal for clipping onto dilators and probes up to 3/4" in diameter, allowing stimulation without removing the tool.

Sound

Finally, a convenient way to get audible free-run EMG audio and notifications in the operating room.

- The sound bar speaker clips on to the bottom of cart-based computer monitor.
- The compact USB speaker provides powerful sound for laptop systems while eliminating the need for another power cord.

Cascade Elite Software

The Cascade Elite software is user-friendly, intuitive and easy to learn. You'll spend less time troubleshooting and more time taking full advantage of the extensive features found in the Cascade Elite to vastly improve patient care and bring greater value to the hospital. Choose the features and options you need to make the perfect system.

Start a procedure in just four easy steps.

1. Click the icon to launch the software.

2. Click to start a new procedure.

3. Choose a procedure from the list.

4. Enter the patient name.

Multimodality

Managing multi modality monitoring is quick and easy using Modes, Mode Controls, and Mode Groups. You choose exactly what you want to monitor, when to monitor it and how it's monitored.
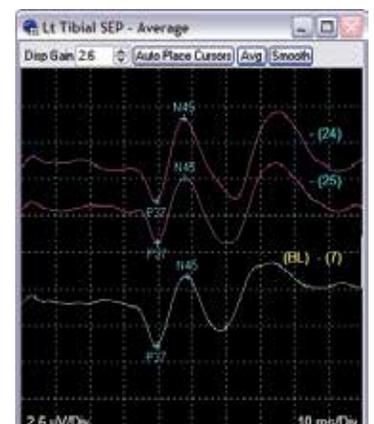
- Flexible setups for each spontaneous and evoked modality allow you to turn on all or some modes manually or in groups
- You have complete control of the stimulus, recording, display and storage for each mode individually
- The system can be set to run in fully automatic mode allowing you to focus on the monitoring

Efficiency

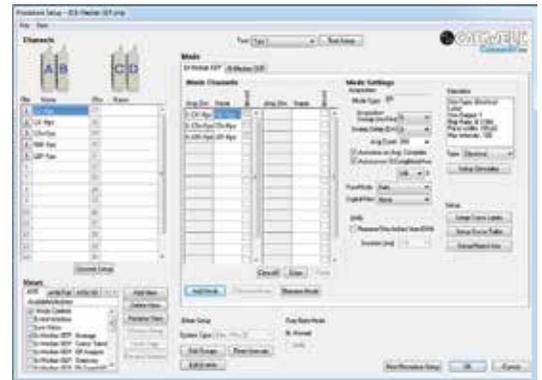An extensive list of automated run options allow hands-free operation.

- Auto-placement of cursors
- Store waveforms, clear the average, and start a new trial
- Automatic interleaving of all modes provides faster data acquisition, quicker response time, and faster intervention
- Run multiple modes simultaneously; the system automatically adjusts the repetition rate as you start and stop modes
- Auto-store EMG activity that exceeds above a user-defined amplitude threshold

Intuitive

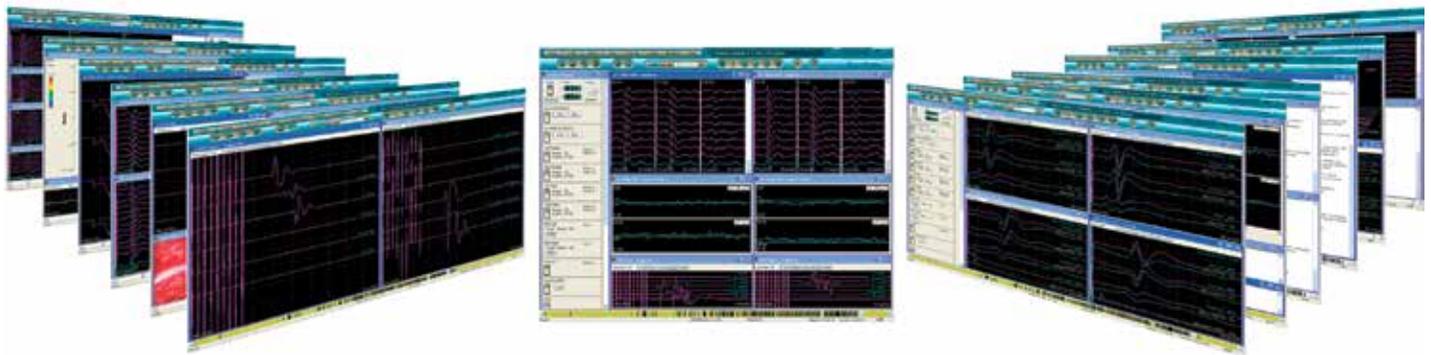Easy and intuitive procedure setup menus save valuable time before and during surgery.

• Graphic displays make it easy and intuitive

• Views can be defined and arranged in the procedure setup so you are ready to monitor when the procedure begins

• Edit procedure settings on the fly without exiting the patient record

Flexible Data Presentation

Using windows and views, all users can customize the way data is presented.

• Display data in a variety of window types – averaged; stacked; numeric trends; 3D waveform trends and waveform analysis

• To accommodate the massive amounts of data generated by multimodality monitoring, you can create up to 20 unique views. Views are comprised of a select set of data display windows. It's easy to switch views with one mouse click to quickly access the data you need

• Windows, screens and event lists can be copied and pasted into outside applications such as Microsoft® Word documents

• All Cadwell instruments run on familiar Microsoft Windows® operating systems

Remote Monitoring

Cadwell's optional remote monitoring feature allows multiple reviewers to connect to a single Cascade system, and also allows one reviewer to remotely monitor multiple Cascades at the same time. Remote readers can review data, change views and data presentation instantly without affecting the acquisition system.

To use remote monitoring, users simply connect to a network, type in the name or IP address of the system to be monitored and go.

Report Generation

Reports are automatically generated from data acquired during the case with just a few mouse clicks.

- Customizable report templates let you quickly create reports tailored to your needs
- Waveform stacks and tables of numeric data let you quickly generate a report showing data for an entire procedure
- Sentence generator creates grammatically correct sentences with just mouse clicks and no typing
- Reports are generated as .rtf and can be opened in Microsoft® Word or other word processing programs

Video

Our optional video package allows you to be more than an observer in the operating room and allows the whole team to provide better patient care. Video snapshots allow excellent post-operative and intraoperative review.

- Displays video images from multiple sources including microscope or overhead cameras in the Cascade software
- Allows up to 2 video sources simultaneously
- Adjustable refresh rate of up to 30 frames per second makes for a smooth video image
- Cameras with adjustable resolution allows the user to enlarge the image up to full screen to see more detail if desired
- Store a snapshot when any or all of these occur:
    - EMG event
    - EP average complete
    - Event comment entered
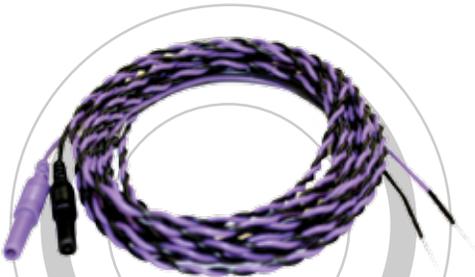   - Time interval

Cadwell Customer Support

Cadwell is focused on making you a satisfied, loyal customer for years to come. Our telephone support is second to none. We answer every call during business hours with a real person. Our in-house employee technicians are trained professionals. Our web-based support program allows our technicians to troubleshoot real-time – as if they were in your office. Our flexible service contracts will meet your specific needs. Just ask.

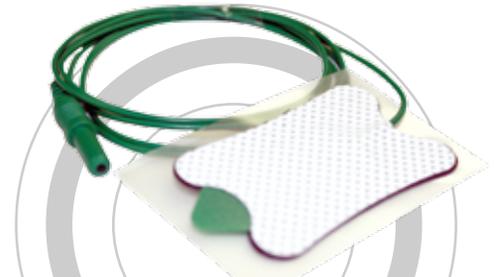## Supplies and Accessories - www.estore.cadwell.com

You can also count on Cadwell for a complete range of quality, reliable supplies including subdermal needles; disposable and reusable surface electrodes; and a wide variety of stimulating probes. We are your one-stop source for everything neurophysiology related.

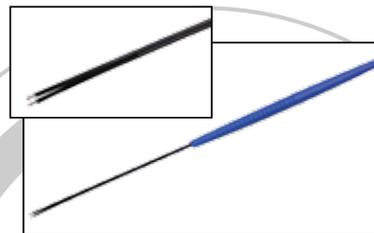Cadwell twisted pair subdermal needle electrodes

Cadwell disposable subdermal needle electrodes
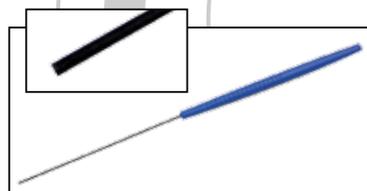

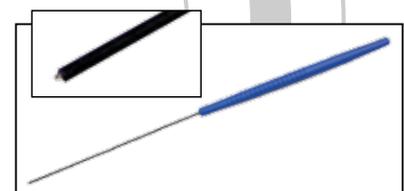Disposable ground electrode with lead wire

Cadwell subdermal corkscrew

Side-by-side bipolar stimulating probe

Flush Tip Monopolar stimulating probe

Concentric bipolar stimulating probe

Cadwell's intraoperative neurophysiological monitoring software and products are not intended for intraoperative lateral transpsoas monitoring that employs automated methods of nerve threshold detection ("ILTM applications"). Cadwell disclaims all use of its intraoperative neurophysiological monitoring software and related products for any use for ILTM applications. With the exception of support Cadwell has a legal and ethical obligation to provide, Cadwell does not support or provide assistance for any use of its intraoperative neurophysiological monitoring software and products for ILTM applications. The use of Cadwell's intraoperative neurophysiological monitoring software and products for ILTM applications is not recommended and at the user's own risk.

⊕CADWELL®

909 N. Kellogg St. · Kennewick, WA 99336
(800) 245-3001 · (509) 735-6481 ph · (509) 783-6503 fx
www.cadwell.com · info@cadwell.com

EU Authorized Representative.
CEpartner4U www.cepartner4u.nl
Esdoornlaan 13
3951 DB Maarn
The Netherlands Tel: +31 6 516 536 26   0344

CE