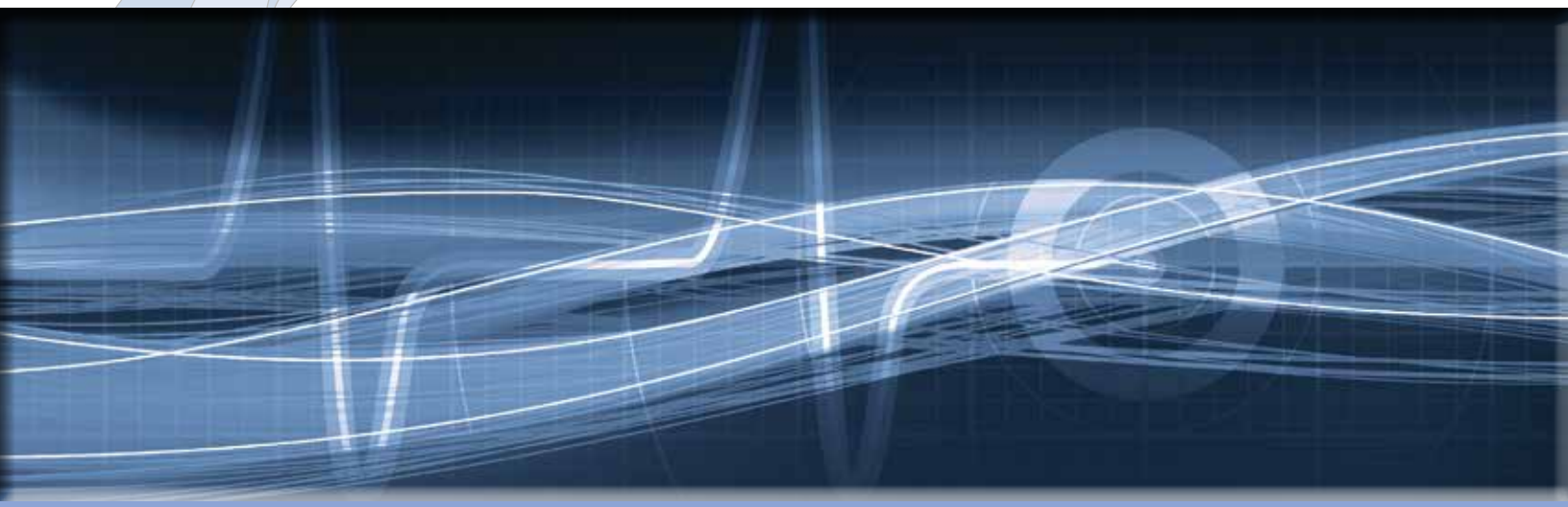
Sierra® Wave®

emg/ncv/ep



Advancing medical technology to help you, help others.

CADWELL®

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.

Advancing medical technology to help you, help others.

The New Standard in EMG/NCV Instrumentation

The Sierra® Wave® is full-featured and easy to use. The quality and reliability you expect from Cadwell are designed and built into each instrument at our Kennewick, Washington factory and home office.

Available in either a portable laptop or desktop computer configuration, it is test-ready right out of the box.

Sierra® Wave®
emg/ncv/ep

Sierra Wave with laptop
and two channel amplifier. Also
available with a four channel amplifier.

Features of a Basic Wave System

- Base Unit *(requires a computer)*
- Programmable Handheld StimTroller™ *(remote stim and test controller)*
- 2 or 4 Channel Amplifier
- Footswitch
- EMG protocols *(free run and capture mode)*
  - Buffer Playback with audio *(up to 10 minutes)*
  - Unlimited Buffer Storage
  - Programmable Muscle Scoring
  - EMG snapshots within the published reports
- Single Motor Unit Analysis *(SMUA)*
- EMG Guided Injection Protocol
- NCV *(motor, sensory, mixed, inching)*
  - Unique Trace History feature
- F Wave / H Reflex *(markers mode)*
- F Wave *(cursors mode)*
- AnatomyVIEW™
- Side-to-Side Comparisons *(NCV, F, H, EP)*
- DataLAB™ *(calculate user-defined relationships)*
- Blink Reflex
- RNS
- SEP *(upper, lower, dermatomes)*
- SSR *(Sympathetic Skin Response)*
- RR Interval *(heart rate variability)*
- Programmable Study Lists
- Auto Findings Composer *(automatic comparison to norms and creation of sentences for NCV, F, H, EMG, and EP findings)*
- Tabular Data Summary View
- QuickReport™ MS Word® based report generator
- EP Analysis *(add, subtract, average, grand average, invert)*
- EMG to AVI Converter *(convert EMG to video files)*
- EMG to WAV Converter *(convert EMG to audio files)*
- ASCII Output Utility *(all test protocols)*
- Support of Multiple Users
- Network Ready configuration
- Internal Calibration Signal
- Comprehensive Application Help Topics
- Free Technical Phone Support
- Lifetime Software Upgrades
- Softsided Carrying Case (with laptop system)
- Starter Electrode Kit

Sierra Wave two channel amplifier

Sierra Wave Cart Options

Sierra Wave with laptop and two channel amplifier on a point of care cart. A printer can be placed on the shelf and supplies stored in the bin above.

Example of a multimodality system that includes a Sierra Wave for NCV/EMG/EP and Easy III for EEG/PSG tests, all set on a narrow trolley cart. A printer can be placed on the shelf next to the PC.

Hardware and Software Options

Software

- Multi-Motor Unit Analysis (MMUA)
- Interference Pattern Analysis (IPA)
- Single Fiber EMG (includes Stimulated SFEMG) (Level and Peak Latency)
- Real Time Single Fiber EMG (Peak Latency analysis of up to four peaks)
- Macro EMG
- Motor Unit Number Estimation (MUNE)
  - Assisted Incremental Technique
  - Multiple Point Stimulation Technique
- Collision Study
- HL7 Interface
- Interface Toolkit for Research Applications (DQEMG)
- AEP – with choice of stimulator
- P300 (requires AEP option)
- VEP – with choice of stimulator
- Reader Software (does not include Microsoft® Word®)

Hardware

- Toshiba® Laptop or Dell® Desktop computer
- Skin Temperature Probe
- External Speaker
- Amp/Stim Switchbox for Injection Studies
- Trigger Out Interface Cable (TTL)
- Softsided carrying case with wheels and handle
- Laser or inkjet printer
- Multiple cart choices
- Isolation Transformer

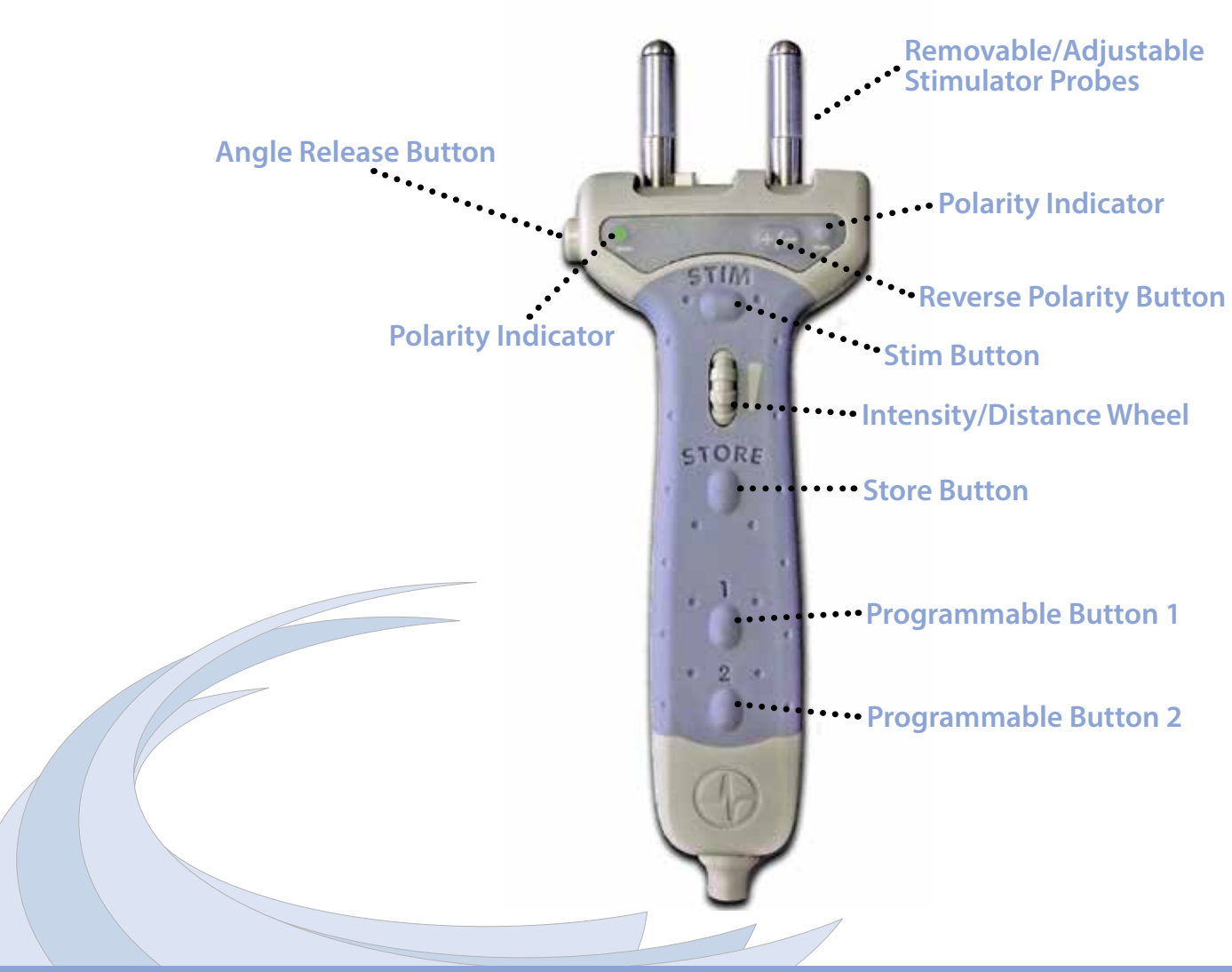
StimTroller™

Programmable Stimulator and Test Controller

Reduces test time by providing commonly used functions on the remote handheld stimulator. A typical study can be performed without having to reach back to the base unit or computer. Programmable buttons allow customization to suit your technique.

Functions include:

- Single or repetitive pulses
- Polarity reversal
- Intensity adjust
- Trace storage
- Distance entry
- Next test
- Start/stop EMG acquisition
- Store EMG snapshot
- EMG gain control
- Move forward and backwards within EMG buffer
- Playback of EMG buffer.
- Probes can be removed to connect standard bar and ring electrodes.
- Adjustable stimulus probe angle & width for easier and faster access to all stimulus locations.
- Two programmable buttons can be assigned test specific functions.

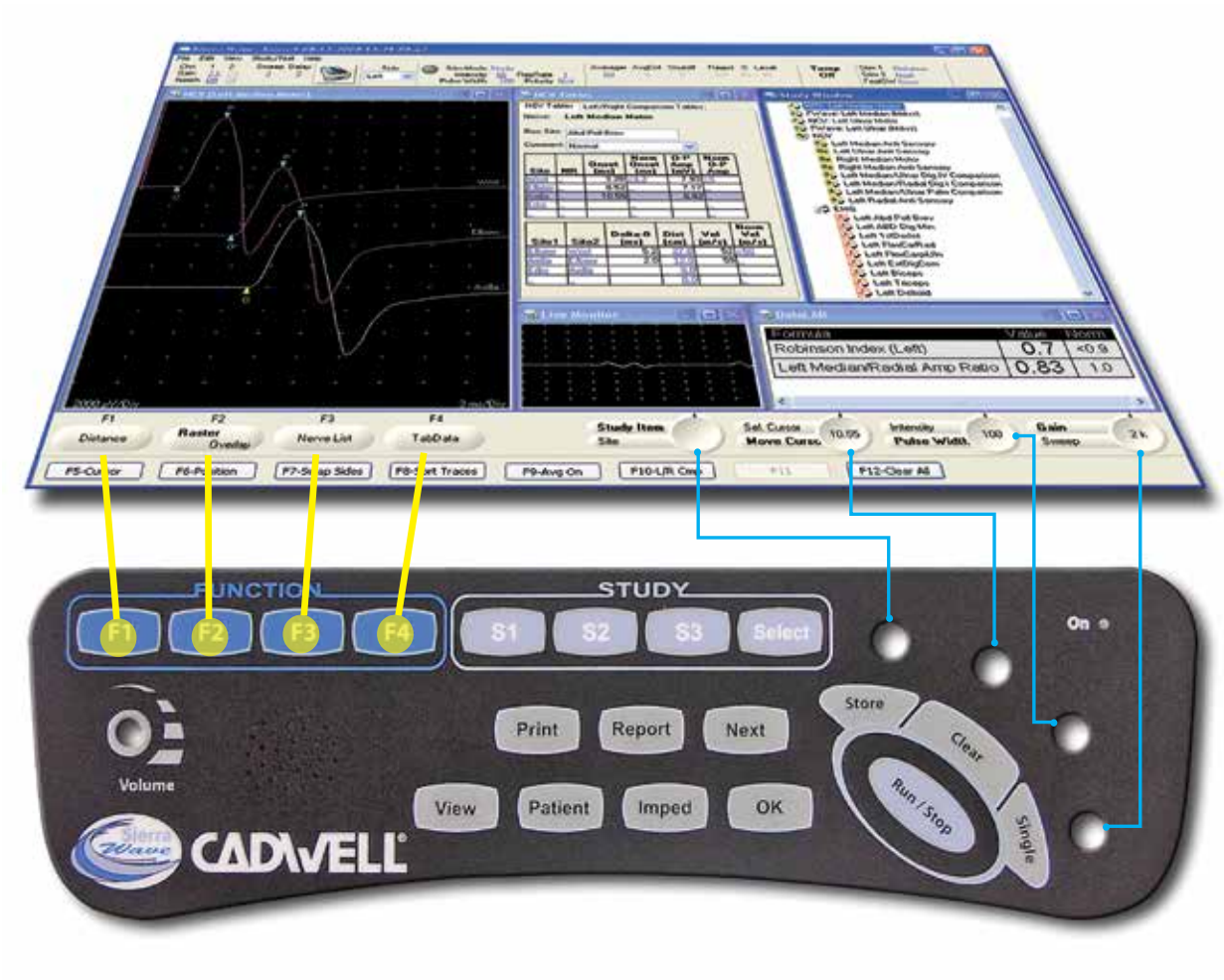


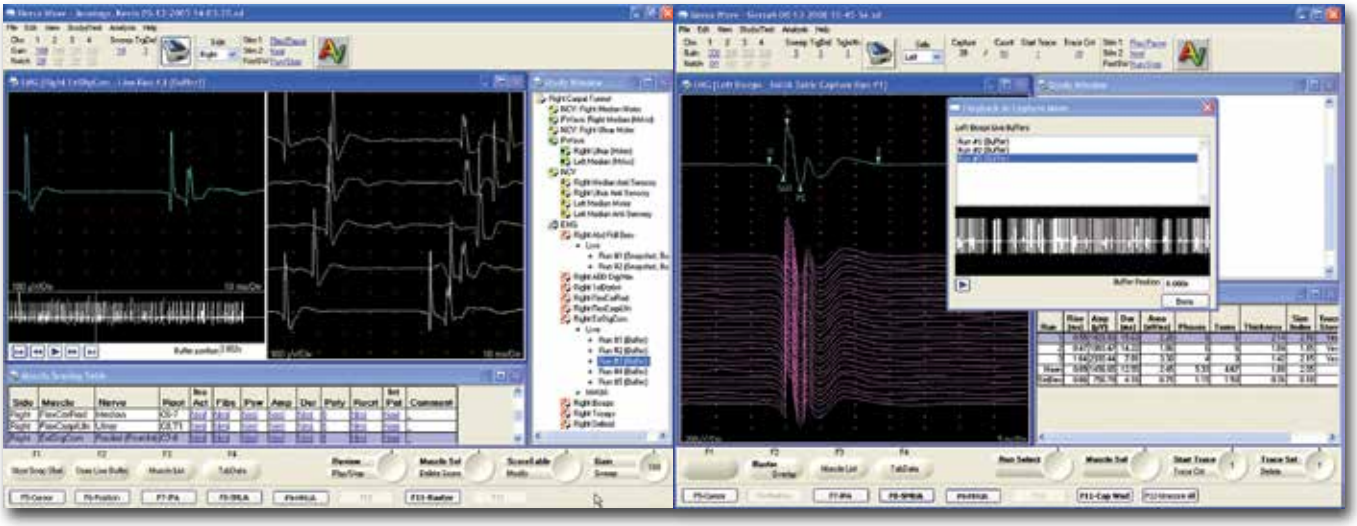
User Interface

These user interfaces provide flexibility and ease of use:

- Main Control Panel (buttons & knobs)
- StimTroller (unique combination stimulator and remote control)
- Mouse (both left & right-click functionality)
- Footswitch (programmable per test)
- Windows® XP Professional and Windows 7 operating system.

Standard Ethernet communication interface provides compatibility and upgradeability in a rapidly changing PC environment.



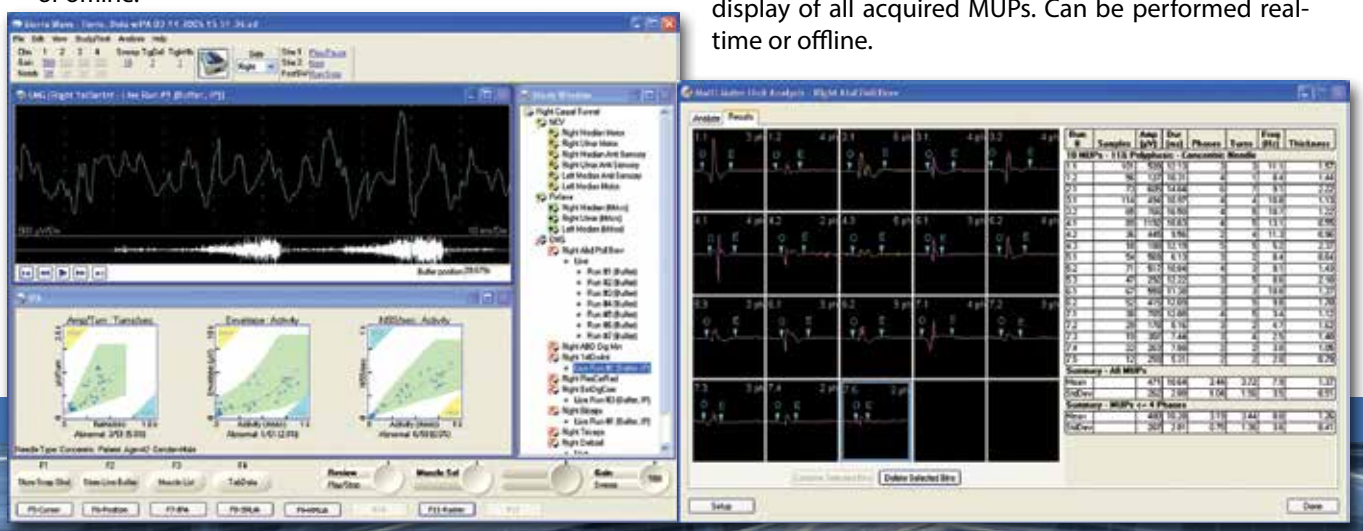


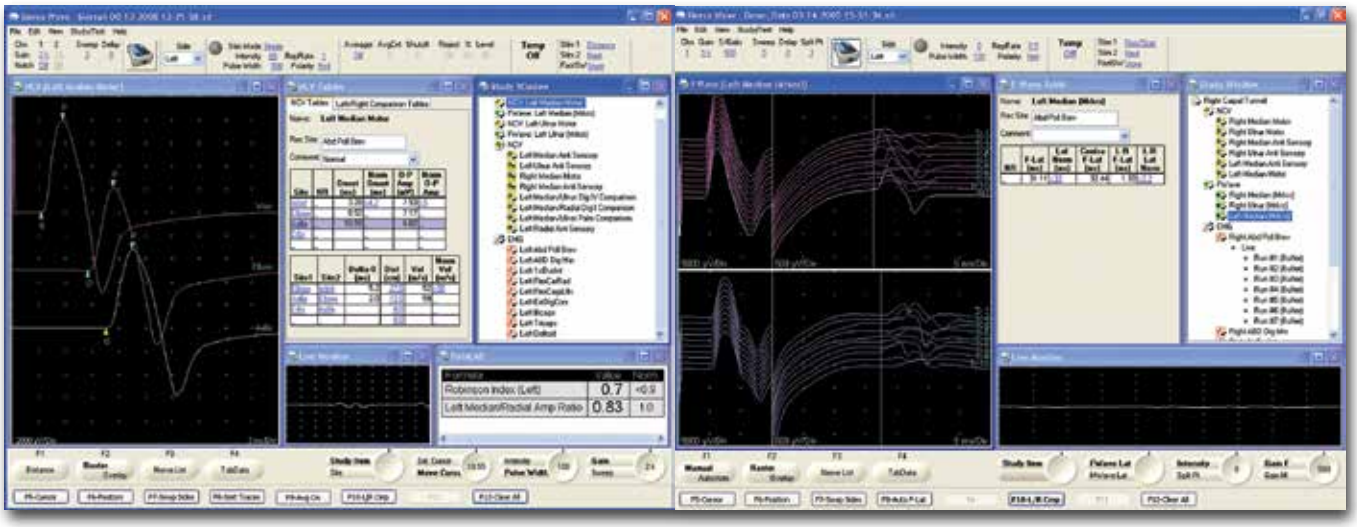
Standard EMG protocol includes both Live and Capture data acquisition modes with easily accessible muscle scoring table. Up to 10 minute Live EMG Buffer with unlimited storage and playback. Full-screen or raster displays. Manual MUP tool for quick documentation of interesting motor unit potentials.

AnatomyVIEW feature displays the EMG muscle scoring and NCV data on a 3D color-coded anatomical model. Green indicates normal findings and varying levels of yellow-orange-red indicate abnormal results. The models can be rotated and resized quickly using the mouse. This graphic can be included in reports.

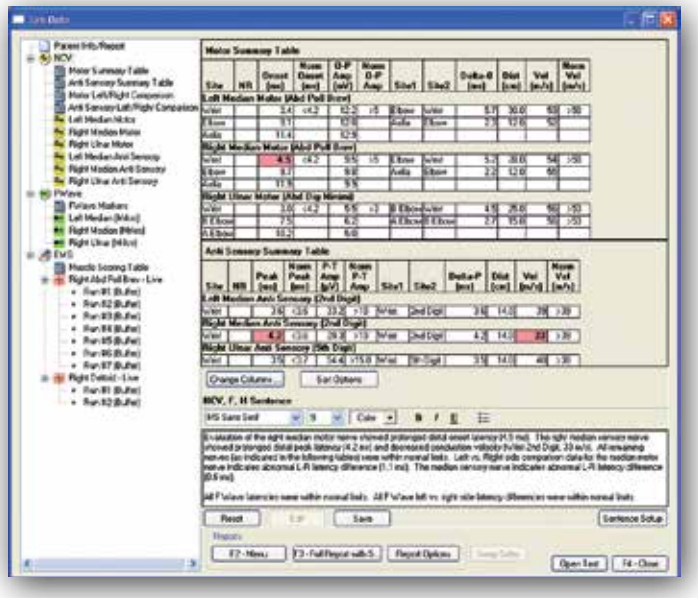
Interference Pattern Analysis: Quantifies the electromyographic interference pattern and displays the results on color coded plots. Analysis includes Amplitude vs. Turns, Envelope vs. Activity, and Number of Short Segments vs. Activity. Normative reference "clouds" provided for several muscles. IPA provides a basis for classifying the interference pattern as normal, neuropathic, or myopathic. Can be performed real-time or offline.

Multi-MUP Analysis: Signal decomposition and template matching is used to extract, identify, and sort motor unit action potentials from an epoch of EMG. Typically 1 to 6 motor units can be extracted from one epoch. Includes flexible editing features and summary display of all acquired MUPs. Can be performed real-time or offline.





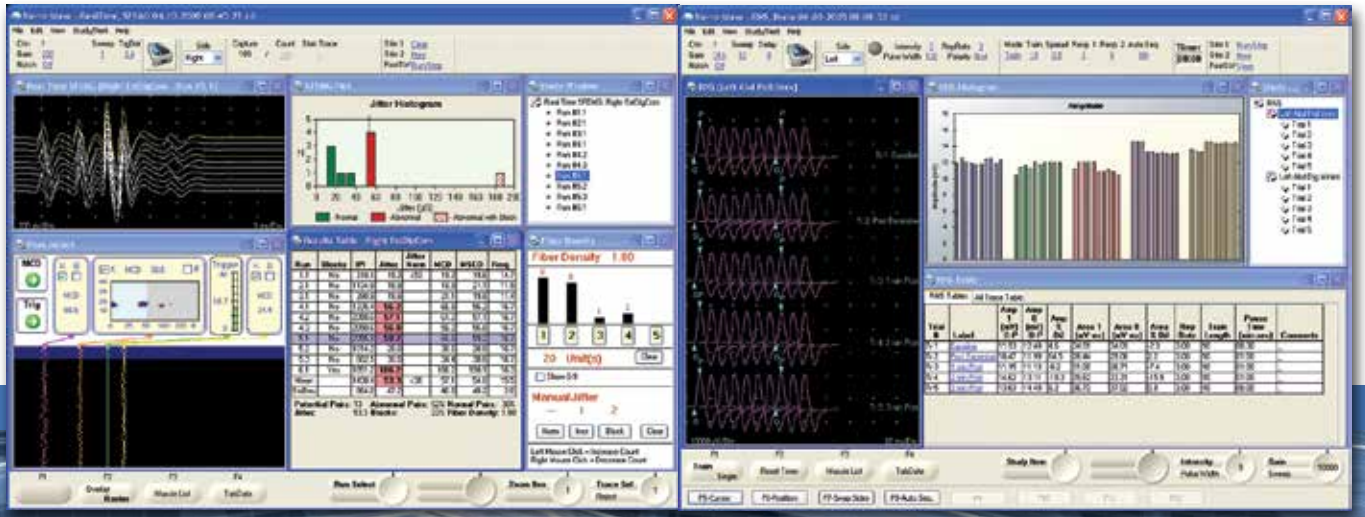
Automatic cursor placement and **Left vs. Right comparisons** in NCV, F, H, and Evoked Potential test protocols. Live Monitor window facilitates identification of artifacts or poor electrode connections. On-line comparison to reference data and identification of abnormal values. Unlimited number of traces displayed per test protocol.

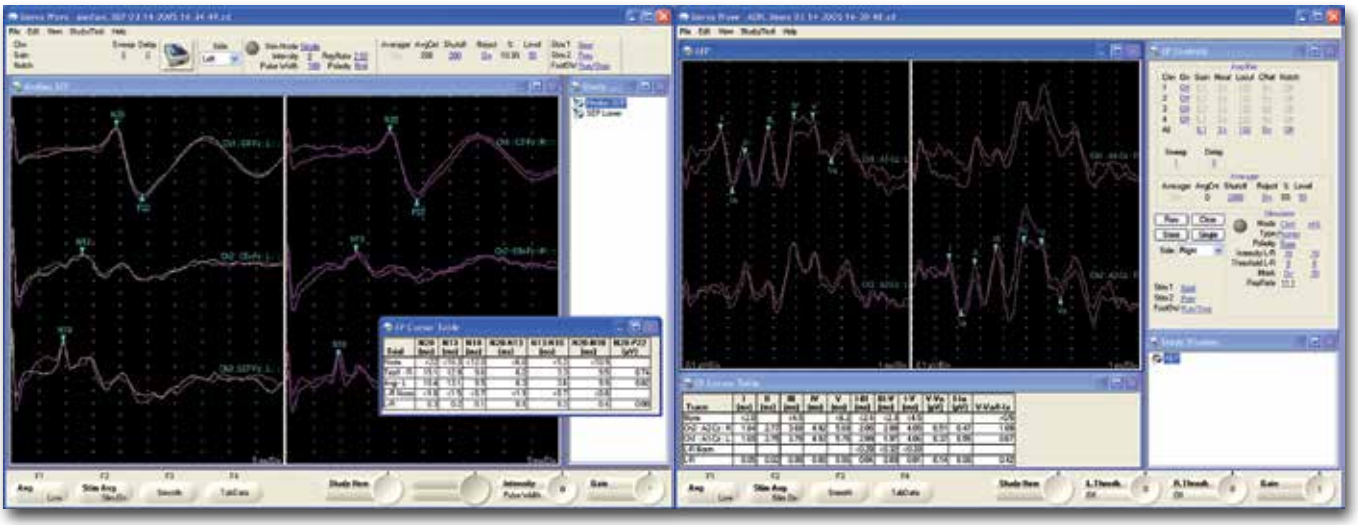


Unique **Tab Data Summary View** provides quick and convenient review on all acquired traces and tabular results. Adjust cursor positions, change distance measurements, and playback of stored EMG without having to return to the specific test protocol. Cadwell's unique Auto Findings Composer compares the patient's values to your norms and creates findings sentences for NCV, F, H, EMG, and EP's.

Spontaneous or Stimulated **Single Fiber Analysis** using either voltage crossing or real-time peak latency detection. Records up to 100 consecutive discharges and displays #blocks, MCD, IPI, and frequency. Review and editing can be done real-time or offline.

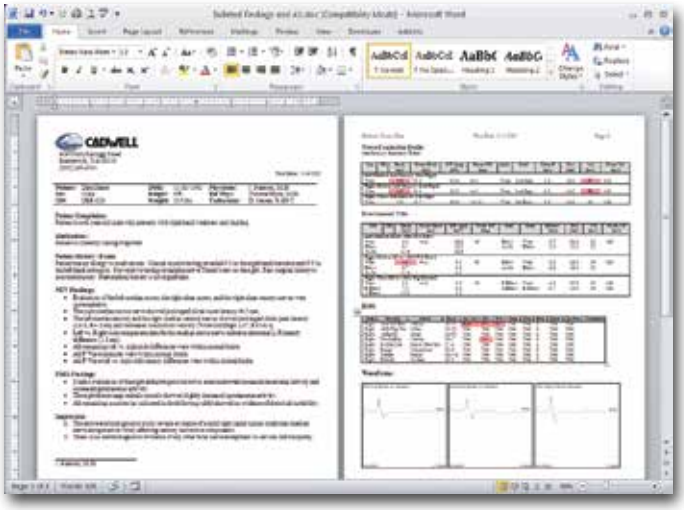
Repetitive Nerve Stimulation by manual or automatic delivery of programmable stimulus trains. Results include comparison of both amplitude and area for all responses in the train. Supports stimulation frequency up to 50 Hz and 2 channel recording.

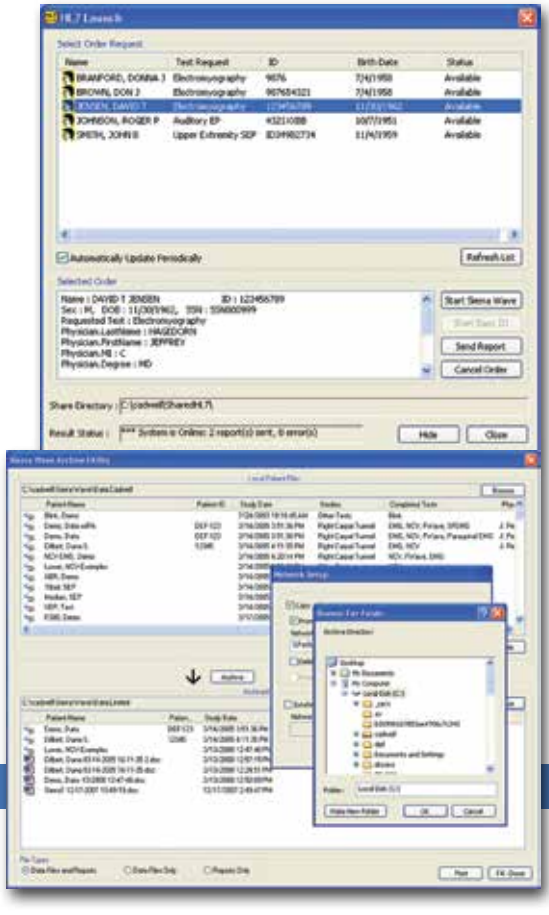




Evoked Potentials include somatosensory, auditory, and visual modalities with display and storage of unlimited number of waveforms. Auto-cursors for marking important waveform features with automatic side-to-side comparison and highlighting of abnormal values. Adjustable artifact rejection and external TTL trigger support.

Report Generator utilizes Microsoft Word and includes customizable modules for entry of patient history, physical exam, impressions, and more, without having to type at the keyboard. Reports include tabulated data, waveforms, anatomical displays, and results of Auto Findings Composer. Templates can be customized to suit your individual needs.





The **HL7 Interface** module allows the Sierra Wave to receive order messages from a Hospital or Office EMR and present them in a launch window. Selecting a patient in the launch window starts the Sierra Wave application and automatically populates the patient demographics, thereby eliminating double entry of patient data. The HL7 Interface module also supports the ability to send a results message back to the Hospital or Office EMR at the conclusion of the patient's exam. The results message allows the patient's report document to be imported into the patient's electronic chart.

Multi-user support and Data Management: Each Sierra Wave user can have their own test protocol settings and patient directory. The Sierra Wave is easily connected to the Hospital or Office network via hard-wired or wireless connections. Files can be stored locally or on a network share. Built-in archiving and data exporting tools are included in the program.

Cadwell Customer Support

REMOTE ASSISTANCE

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 support programs will meet your specific needs. Just ask.

Supplies and Accessories

Cadwell has a complete range of quality, reliable supplies as well. From Monopolar and Concentric to Injectable and Single Fiber needles; disposable and reusable surface electrodes for NCV, EMG and EP. We are your one-stop source for everything neurophysiology related.

Disposable injectable needles

Disposable monopolar needles with attached lead wire

Disposable patient pak electrodes

Concentric needles with detached lead wire

Shielded crocodile clips

Disposable electrodes with lead wire

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