Electromyography (EMG) Redefined

Highest Fidelity Data

Lowest Baseline Noise Levels
(Static and Dynamic)

Plug-and-Play Smart Sensor System
(Featuring SmartLeads)

Unlimited Capture and Analysis Potential
Introducing the Ultium® Biomechanics Research System

Noraxon’s new line of ultra-premium wireless sensors for biomechanics.

Next Generation EMG

Ultium-EMG was designed to be the most intelligent and precise EMG system ever built. With the world’s best EMG technology at its core, the Ultium-EMG sensor system is a multi-modal, wireless device that delivers unprecedented data integrity and evaluation capability. The system features new, patent-pending set of “SmartLeads”, which transform the EMG device into an intelligent sensor for virtually any type of biometric and physiological data, from any type of hardware.

The full-featured Ultium-EMG sensor samples up to 4,000 times per second, synchronizes in real-time, and demonstrates the lowest baseline noise with the fewest native artifacts of any similar technology.

Ultium-EMG combines the best in electromyography with the flexibility to accurately capture the most interesting aspects of human movement.
Four decades of EMG expertise.
Clarity and reliability that always meets expectations, any way you measure it.

Patented Innovations for Evidence-Based Excellence

At the heart of Noraxon's biomechanics platform are patented and FDA-approved technologies that power world-class data capture. The result is reliable, repeatable and pure data that enables the precise study of human movement.

FULL-FEATURED SOFTWARE
The myoMUSCLE™ software module features an intricate and sophisticated toolset capable of handling any type of electro-kinesiological data captured with the Ultium-EMG sensors. Real-time data is automatically synchronized and viewable through pre-configured, customizable reports, enabling detailed insight for performance enhancement, injury recovery or research metrics. Multiple data export formats and HTTP streaming also allow compatibility with third-party research and animation programs.

To assure a comprehensive view of biomechanics, myoMUSCLE is fully integrated and synchronized across the myoRESEARCH® software platform, a full-featured ecosystem that covers the entire spectrum of biomechanics including EMG, kinetics (pressure and force), kinematics (motion and video), and other bio-signals.

HARDWARE FEATURES
- Up to 4,000 Hz EMG sampling rate
- 24-bit internal sampling resolution
- ±24,000 µV EMG input range
- Baseline noise <1µV
- CMRR ≤ -100dB
- Optimal signal to noise ratio
- Integrated 16g accelerometer (16-bit resolution)
- Proprietary radio frequency hopping protocol
- Sweat-resistant design
- Software controlled digital filtering
- Shielded cables for minimal artifact
- Internal memory for >8 hours of data logging
- EMG + accelerometer data (2000Hz / 500Hz)
- "Lossless" on-board data recovery technology, with wireless or post-hoc high-speed recovery via dock
- Up to 32 channels of analog output available

SPECIAL FEATURES
- Built-in impedance checker
- Battery status monitor
- SmartLead auto detection
- Find My Sensor visual feedback

ANCHORING THE SYSTEM
Anchoring the system is the Ultium wireless receiver, which receives, synchronizes, and simultaneously processes data from up to 16 Ultium-EMG sensors.

AVAILABLE SMARTLEADS
- Surface EMG
- Footswitch (FSR or insole)
- Fine-Wire EMG
- Handgrip Dynamometer
- 2D Goniometer
- Analog Input Probe (3-channel)
- Flexiforce - local pressure
- Physiomonitor (breath/heart rate)
- Accelerometer (all-in-one 24g/100g/400g)
- Force Sensor (100lb or 500lb)
Ultium-EMG was designed to be, simply, the most precise EMG system ever built.

Sophisticated advances in technology resulted in the patent-pending “SmartLead” system, which transforms the device into an intelligent sensor for virtually any type of data, from any type of hardware. Ultium-EMG combines the best in electromyography with the flexibility to accurately capture the most interesting aspects of human movement. Any data. Anywhere.

TECHNICAL DATA

POWER AND SYNCHRONIZATION
- Receiver: USB connection to PC (up to 25m)
- TTL 2-5V sync input
- Wired/wireless exact output sync system
- Powered by USB

OUTPUT AND TRANSMISSION FREQUENCY
- up to 100 mW
- 30-meter sensor transmission range
- Proprietary radio frequency hopping protocol
- 2402-2480 MHz
- 16-bit analog outputs with adjustable gain
- Fixed output delay: 300 ms

REAL-TIME OFFLINE RECOVERY
- 2GB onboard memory, 9-18 hours
- Selectable wireless or docked data recovery

EMG SENSOR DATA ACQUISITION
- 24-bit ADC, dynamic resolution
- 0.3μV resolution for 0 to 5,000μV
- 1.1μV resolution for 5,001 to 24,000μV
- Low transmission delay
- Selectable low-pass cutoff at 500/1000/1500 Hz
- Selectable high-pass cutoff at 5/10/20 Hz
- Selectable sample rate of 2000 or 4000 Hz

EMG PREAMPLIFIER
- No notch (50/60 Hz) filters
- Baseline noise: <1μV RMS
- CMRR < -100dB
- Input impedance: > 1,000 MΩ
- Input range: +/- 24mV

REAL-TIME OFFLINE RECOVERY
- 2GB onboard memory, 9-18 hours
- Selectable wireless or docked data recovery

ULTIUM-EMG SENSOR DIMENSIONS
- Size: 37 x 24.5 x 16.5 mm (LxWxH)
- Weight: 14 grams

ULTIUM-EMG DOCKING STATION DIMENSIONS
- Size: 174 x 92 x 169 mm (LxWxH)
- Weight: 545 grams

ULTIUM-DASH RECEIVER DIMENSIONS
- Size: 261 x 36 x 29 mm (LxWxH)
- Weight: 185 grams