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-ESP 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-ESP sensor system is a multi-modal, wireless electronic signal portal. Sophisticated advances in technology resulted in the patent-pending “SmartLead” system, which transforms the ESP device into an intelligent sensor for virtually any type of biometric and physiological data, from any type of hardware.

The full-featured ESP 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-ESP combines the best in electromyography (EMG) 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.

HARDWARE FEATURES

- Up to 4,000 Hz EMG sampling rate
- 24-bit internal sampling resolution
- $\pm 24,000 \mu V$ EMG input range
- Baseline noise <1µV
- CMRR $< -100$dB
- 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
- 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

The myoMUSCLE™ software module features an intricate and sophisticated toolset capable of handling any type of electro-kinesiological data captured with the Ultium-ESP sensors. Real-time data is automatically synchronized in an all-in-one analysis, 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.

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-ESP 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 ESP into an intelligent and multi-modal wireless Electronic Signal Portal for virtually any type of data, from any type of hardware. Ultium-ESP combines the best in electromyography (EMG) with the flexibility to accurately capture the most interesting aspects of human movement. Any data. Anywhere.

TECHNICAL DATA

POWER AND SYNCHRONIZATION
- USB connection to PC
- TTL 2-5V sync input
- 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

EMG SENSOR DATA ACQUISITION
- 24-bit ADC
- 0.3µV resolution for 0 to 5,000µV
- 1.1µV resolution for 5,001 to 24,000µV
- 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

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

ULTIUM-ESP 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

PENDING CERTIFICATIONS

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