



# ultium<sup>®</sup> EMG

Wireless Surface EMG with Internal IMU

- ◆ Versatile SmartLead<sup>™</sup> Options
- ◆ Data Recovery with Lossless Technology
- ◆ Lifetime Battery Replacement

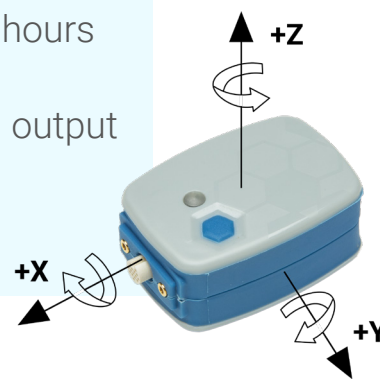
NORAXON<sup>®</sup>

# Noraxon's Ultium EMG sensor system is a multi-modal device that delivers high-fidelity data and flexible measurement options.

## The Ultium<sup>®</sup> EMG Sensor System

### Hardware Features

- Up to 4,000 Hz EMG sampling rate
- 24-bit internal sampling resolution
- $\pm 24,000 \mu\text{V}$  EMG input range
- Baseline noise  $< 1 \mu\text{V}$
- Shielded cables for minimal artifact
- Software controlled digital filtering
- Enhanced radio frequency communication
- Integrated IMU (16-bit resolution)
- Lossless technology with wireless or post-hoc data recovery
- Internal memory for up to 8 hours of data logging
- Up to 32 channels of analog output
- Mobile device compatibility



## Integrated Movement Technology

Noraxon EMG allows users to integrate with various other recording devices to fit unique applications such as:



**Symmetry & Coordination Tests**



**Average Activation Patterns**



**EMG Amplitude Analysis**



**Pelvic Floor Therapy**



**Biofeedback Training**



**Gait Analysis**



**Isokinetic Testing**



**Fatigue Analysis**

The myoMUSCLE™ software module features an easy-to-use toolset for handling kinesiological data to enable detailed insight for performance enhancement, injury prevention, and neuromuscular biofeedback.

## Versatile Smartleads

The patented SmartLeads enable our system to convert the EMG device into a highly adaptable sensor capable of collecting diverse kinesiological data.

### ACCELEROMETER

Detect accelerations up to 400 g.

### ANALOG

Wirelessly capture analog signals.

### BIOMONITOR

Capture ECG, heart rate, and respiration.

### FINEWIRE

Capture intramuscular activity.

### FLEXIFORCE

Measure force between two surfaces.

### FOOTSWITCH FSR

Detect foot contact events.

### GONIOMETER

Measure 2D angles.

### HAND DYNAMOMETER

Measure isometric grip force.

### LINEAR FORCE

Measure push and pull forces.

### ULTIUM INSOLE

Assess plantar pressure distribution.



## All-in-One Biomechanics Software

Seamlessly collect and combine a variety of data within a unified software platform.

- Comprehensive signal processing tools
- Customizable analysis reports
- Multi-device synchronization
- Multiple data export formats
- HTTP streaming functionality



### Digital Device Integration

QUALISYS  
Motion Capture Systems

VICON

MOTION  
ANALYSIS

CSMi

BIODEX

BTE™

# TECHNICAL DATA

## POWER AND SYNCHRONIZATION

### Sensor

- Li-Polymer battery
- 8-hour operational runtime
- 3-hour charge time

### Receiver

- Power and data transfer by USB
- Sensor charging by 5V PSU
- Accepts 2-5 V TTL sync input

## DATA TRANSMISSION AND OUTPUT

- 2.4 GHz wireless and Bluetooth Low Energy
- 30 m wireless transmission range
- 16-bit analog output with adjustable gain
- Fixed 300 ms analog output latency

## DATA ACQUISITION

- Selectable sample rate at 2000 or 4000 Hz
- Selectable high-pass cutoff at 5/10/20 Hz
- Selectable low-pass cutoff at 500/1000/1500 Hz
- No notch (50/60 Hz) filters
- $\pm 24,000$   $\mu\text{V}$  input range
- 24-bit ADC with dynamic resolution
  - 0.3  $\mu\text{V}$  resolution for 0 - 5,000  $\mu\text{V}$
  - 1.1  $\mu\text{V}$  resolution for 5,001 - 24,000  $\mu\text{V}$

## EMG SIGNAL QUALITY

- $< 1$   $\mu\text{V}$  RMS baseline noise
- $> 100$  dB CMRR

## INTEGRATED IMU

- 16-bit resolution
- 200 Hz sample rate (2000 Hz EMG)
- 400 Hz sample rate (No EMG selected)
- $\pm 16$  g accelerometer
- $\pm 2000$  degrees/second gyroscope
- $\pm 4800$   $\mu\text{T}$  magnetometer

## DATA RECOVERY

- 250 MB onboard memory (up to 16 hours of storage)
- High-speed data transfer via sensor dock

## SIZE AND WEIGHT

### Sensor

- 37x 24.5 x 16.5 mm (LxWxH)
- 14 g

### Receiver

- 174 x 92 x 169 mm (LxWxH)
- 545 g

### Charger

- 261 x 36 x 29 mm (LxWxH)
- 185 g



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