



Wireless IMU sensors allow for lab-quality 3D motion capture in natural environments.

The Ultium[®] Motion System

Ultium Motion delivers accurate and reliable kinematic data for all types of movement – **including high velocity and high impact conditions** – while maintaining the advantages of the universal Ultium receiver and multi-device myoRESEARCH software platform.



Portable and Validated

The Ultium Motion system combines **advanced sensor fusion techniques** and **validated biomechanical modeling** with the convenience of **portability** to empower users with:

- Access to **research-grade motion capture** in nearly any environment without relying on a laptop or receiver
- Improved understanding of **human movement** and **performance**
- Objective **data-driven decision-making** for training and treatment protocols
- **Seamless integration** with other Noraxon products & third-party tools

Calibration Adjustment Tool



The Calibration Adjustment Tool, exclusive to Noraxon, allows users to **directly measure** and **apply subject posture** to the myoMOTION skeleton in order to **correct static calibration** and automatically **adjust bone lengths** for ISB-compliant modeling.

ultium[®] MOTION

Portable 3D Motion Capture System

- Capture high velocity & high impact movements
- Data logging & recovery with Lossless technology
- Validated biomechanical model with skeletal avatar

NORAXON[®]

Visualize 3D movement through the Noraxon avatar with joint angle and joint trajectory overlays, automated contact detection, and real-time range of motion feedback.

Integrated Movement Technology

Ultium Motion allows users to integrate with other recording devices to fit practical applications such as:



Human Factors & Ergonomics



Return to Play



Throw & Strike Analysis



Performance Testing



Gait Analysis



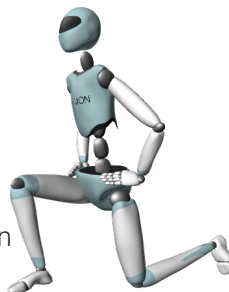
Swing Analysis

All-in-One Biomechanics Software

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

In myRESEARCH, you'll have access to:

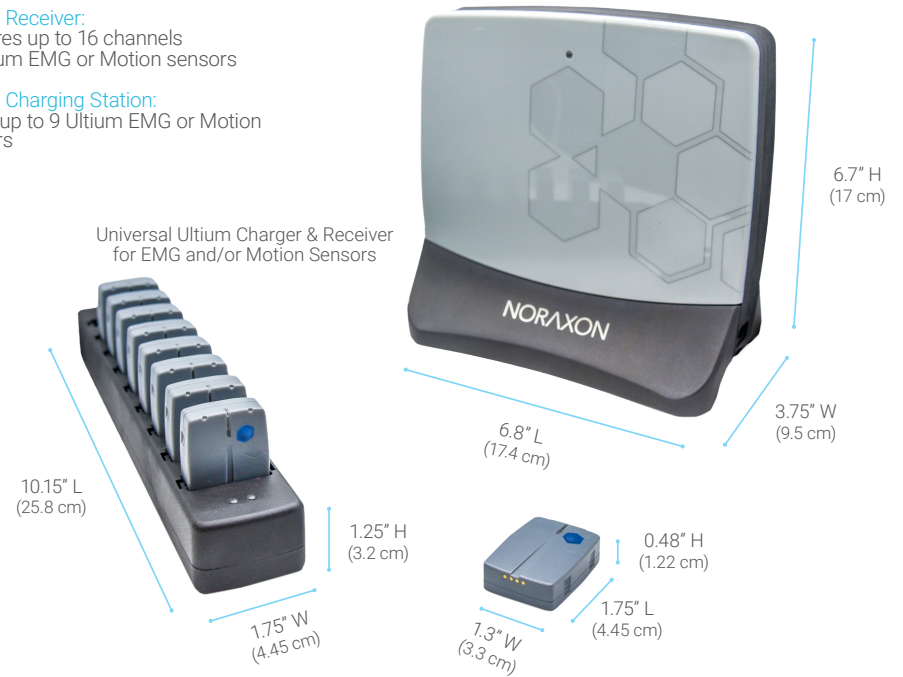
- Anatomical joint angles
- Orientation angles
- Linear acceleration
- Joint trajectories
- Contact detection
- User-defined angles
- Quaternions
- Raw component data
- Enhanced magnetic rejection
- Customizable reports



Motion Sensor Weight:
Less than 0.67oz (19g)

Ultium Receiver:
Captures up to 16 channels of Ultium EMG or Motion sensors

Ultium Charging Station:
Holds up to 9 Ultium EMG or Motion sensors



Measurement ranges:

- Acceleration: +/- 200 g
- Angular velocity: +/- 7,000 deg/s
- Magnetic field: +/- 16 Gauss

Static angular accuracy (RMS):

- 0.25 deg (pitch/roll)
- 1.25 deg (course)

Battery:

- Operational runtime: > 8 hours
- Recharge time: < 4 hours

Maximum measurement output:

- Acceleration: 400 Hz
- Angular velocity: 400 Hz
- Magnetic field: 100 Hz
- Quaternion: 100 Hz
- Orientation & joint angles: 400 Hz

Wireless transmission:

- Range: 40m (typical)
- Proprietary 2.4 GHz hopping protocol
- 250 MB onboard memory (up to 16 hours of storage)



Scan to learn more

www.noraxon.com

Published August 2024

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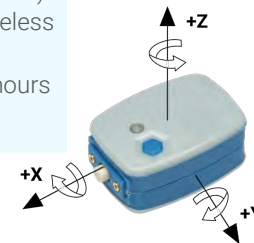


Noraxon's Ultium EMG sensor system is a multi-modal device that delivers high-fidelity data and flexible measurement options.

The Ultium[®] 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



Integrated Movement Technology

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

ultium[®] EMG

Wireless Surface EMG with Internal IMU

- Versatile SmartLead[™] Options
- Data Recovery with Lossless Technology
- Lifetime Battery Replacement

NORAXON[®]



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



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
- ± 24,000 µV input range
- 24-bit ADC with dynamic resolution
 - 0.3 µV resolution for 0 - 5,000 µV
 - 1.1 µV resolution for 5,001 - 24,000 µV

EMG SIGNAL QUALITY

- < 1 µV 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)
- ± 16 g accelerometer
- ± 2000 degrees/second gyroscope
- ± 4800 µT magnetometer

DATA RECOVERY

- 2 Gigabit 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)

Charger

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



Scan to learn more



novel 

pliance®

for wheelchair development

Pressure mapping for wheelchair improvement

Use pliance® to provide **dynamic quantification** of the **seated localized pressure** locations of a wheelchair user.

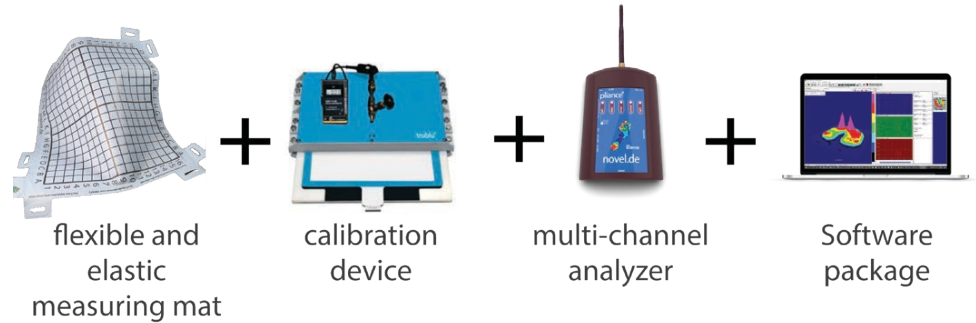
Map pressure locations with an elastic, precise measuring mat, that allows high conformability to **3D-deformed, soft objects.**

pliance® key benefits for R&D:

- rely on absolute & repeatable technology for static and dynamic pressure distribution measurement on wheelchairs
- get dynamic quantification of the seated localized pressure locations of patients with 3 easy steps
- receive assistance in the selection of the appropriate cushions and correct adjustments of the wheelchair to fit the individual patient



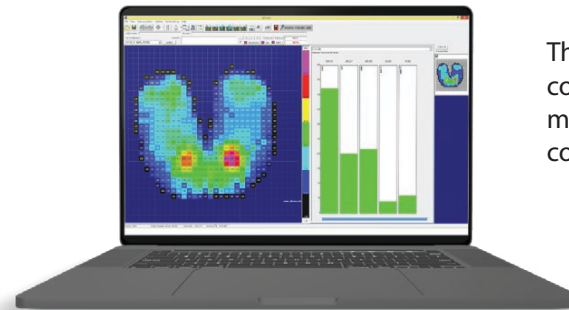
pliance® application package



The system consists of a not only flexible but also elastic measuring mat, a multi-channel analyzer, a calibration device and a software package.

pliance® software features

Using novel medical scientific software the expert is able to design the analytical approach to their specific needs and to collect the relevant data.



The pliance® software allows continuous data storage in real-time mode and data handling with a configurable SQL database.



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