KinetiSense™
Biokinetic Analysis System

giving research some new *moves*

KinetiSense is a small, lightweight, wireless device that integrates motion detection and electromyography (EMG). Three orthogonal accelerometers and gyroscopes provide 3-D motion while two EMG channels record muscle activity. The KinetiSense system provides incredible flexibility to quantify movement disorder features in many research applications.

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The KinetiSense system consists of two small lightweight units, the Motion Sensor (smaller) and the Command Module (larger). Accelerometers and gyroscopes within the Motion Sensor provide monitoring of three dimensional motion while the Command Module provides battery power, memory and wireless real-time data transmission. Up to 5 Motion Sensors can be connected to the Command Module for monitoring from multiple areas simultaneously. The KinetiSense software interface provides a real-time data display, a subject database to manage and review recorded data files and post processing features including amplitude and frequency analysis.

- **Motion Sensor:** 3-D motion is monitored with the sensor unit using three orthogonal accelerometers and gyroscopes. Up to 5 motion sensors can be connected to the Command Module

- **Electromyography:** an EMG cable with five leads provide two channels of electrical muscle activity.

- **Wireless Data Transmission:** An embedded radio with a range of ~100 feet, line of sight, allows for untethered monitoring in many research applications.

Device Specifications

Wireless Link	2.4 GHz radio
Data Transmission Range	~ 100 feet (line of sight)
Data Rate	57.6 kbps throughput over the wireless link
Transmission Bandwidth	1 MHz
Batteries	Rechargeable lithium polymer
Battery Life	3 - 15 hours (depending on configuration)
Memory	Stores up to 30 hrs of data

Sensor Unit Specifications / EMG Specifications

Sensor	Angular Rate	Acceleration	Electromyography
Sensor Type	MEMS gyroscopes	MEMS accelerometers	Snap electrodes
Number of Channels	3 orthogonal channels	3 orthogonal channels	2 differential channels
Input Range	±1100 deg/sec	±5 g	±5 mV
Min. Freq	0 Hz	0 Hz	30 Hz
Max. Freq.	20 Hz	20 Hz	1024 Hz
Input Noise	<2.6 deg/sec RMS	<60 mg RMS	<20 μV RMS
CMRR	N/A	N/A	>60 dB
A/D Resolution	12-bit	12-bit	12-bit
Sampling Rates	128 Hz	128 Hz	2048 Hz*
DC Offset Rejection	N/A	N/A	300 mV
Input Impedance	N/A	N/A	>20 Mohm

* Hardware sampled at 2048 Hz, then RMS processed at 128 Hz

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For more information, please contact a Great Lakes NeuroTech Sales Representative at 1-877-GLNeuro (1-855-456-3876) or kinetisense@GLNeuroTech.com

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4415 Euclid Avenue
Cleveland, OH 44103
1.855.GLNeuro
www.GLNeuroTech.com