WEARABLE Sensing

DSI-EEG+fNIR

Dry. Mobile. NIRS.

Revolutionizing EEG and fNIR

State-of-the-art **active** dry-electrode technology	Positive user-experience for all
Synchronized & Superimposed EEG and fNIR signals	For localization & neurovascular coupling
Resistant to electrical, motion, and Mayer Wave artifacts	High signal quality and data integrity
Wireless ambulatory research-grade EEG and fNIR	Recording in natural environments

Applications

- Neuroscience research
- Brain-Computer Interfaces
- Neurovascular Coupling
- Neurofeedback
- Neuromarketing
- Biomarkers
- and many more...

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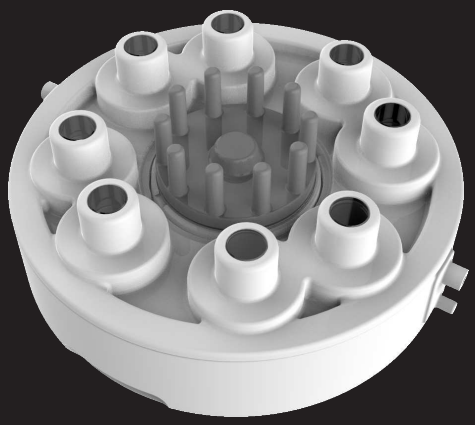
The DSI EEG + fNIR headset is a complete, research-grade, combined wireless EEG and fNIR system designed for synchronized recording of the brain's electrical activity and its haemodynamic response or blood-oxygen-level dependent (BOLD) response. The EEG and fNIR sensors are arranged to allow simultaenous and superimposed recordings at locations distributed on the scalp.

The system comprises ultra-high impedance active Dry Sensor Interface (DSI) sensors and very powerful LED emitters and high sensitivity NIR detectors that function through hair, withou skin preparation or gels. They are spring loaded to provide constant, comfortable contact pressure that mitigates movement artifacts seen during ambulation and are actively and passively shielded to prevent contamination from real-world electrical artifacts.

This multi-modal EEG and fNIR device enables investigation of neurovascular coupling, the relationship between EEG and BOLD, localization of neuronal actiivity sources and more reliable brain activity monitoring.



Uncompromising Signal Quality

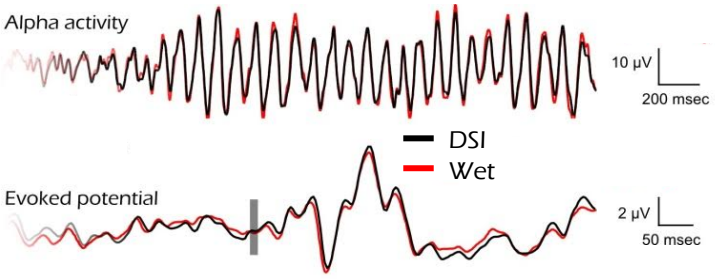
- Active dry electrode sensor with 2 stage amplification and digitization in headset delivers research-grade EEG signal (>90% correlation with conventional wet electrode systems)
- Triple frequency ultra-bright LED emitters and amplified detectors offer reliable through-hair fNIR
- fNIR optodes arranged around EEG sensors for co-registered measurement of EEG and BOLD
- Patented artifact resistant electro-mechanical designs enable ambulation in naturalistic environments
- Short- and Long- light paths fNIR measurements empower integrated algorithms for regression of Mayer wave artifact

Practical EEG and fNIR

- Fully integrated and synchronized, complete EEG and fNIR system in a single device
- Ideal for combined hemodynamic and electrophysiological research
- Autodetection of optimal emitters and detectors to use for each fNIR location
- Raw fNIR signals converted to changes in concentration of oxygenated and deoygenated hemoglobin (BOLD)
- Rapid set-up and clean-up time
  Adjustable to fit a wide range of head sizes (52-62 cm

Powerful Options

- 8 channel locations with combined EEG and fNIR for concomittant measurement of EEG and fNIR
- Provides excellent temporal precision from EEG combined with spatial precision from fNIR.
- Wireless triggering for synchronization of multiple
- devices (hyper-scanning) and ambulatory ERPs
- Bluetooth or wired-USB transmission
  Adjustable power settings for each emitter LED wavelength



Technical Specifications

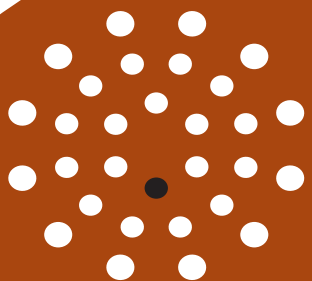
Sensor locations:	International 10-20 system Fp1, Fp2, C3, C4, T3, T4, O1,O2 and A1/A2 sensors for linked ear reference
Reference:	Pz Common-mode-follower
Ground:	Fpz
Positional accuracy::	Within 1.5 cm
Resolution:	16 bit
Sampling rate:	300 Hz EEG, 15 Hz fNIR
Bandwidth:	0.003-150 Hz EEG, 40 nm fNIR
Gain:	60
CMRR:	> 120 dB
Channel cross-talk:	< -70 dB with sensors
Input impedance (1Hz):	47 GΩ
Input bias current:	< 25 pA
DC offset tolerance:	± 200 mV
Maximum input range:	10mV p-p
Noise (1-50Hz):	< 1 µV RMS
Digital inputs:	8 bits
Wireless:	Bluetooth
Wireless range:	10 m
Run-time	4 h
fNIR emitters and detectors:	4 per sensor
Emitter Frequencies:	760, 808, 850 nm

Intuitive Software Included

- DSI-Streamer
  - Signal quality metrics
  - Montages
  - ERPs
  - File formats: EDF, CSV (filtered and raw)
  - Streaming via TCP/IP socket
- C-based API for Windows/Mac/Linux
- LSL streaming

Synchronized Interfaces

- Eye-tracking
- Motion capture
- NeuroGuide / BrainSurfer
- EEGLAB / ERPLAB /BCILAB
- Mensia Neuro RT / OpenVibe
- TEA Ergo CAPTIV
- BCI2000
- E-Prime
- Inquisit
- Presentation



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