Bitbrain

DRY EEG TECHNOLOGY

Diadem 12ch EEG

Wearable EEG for deep insights in
cognitive and emotional research

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Lightweight, portable dry-EEG device with frontal and posterior sensors, designed for comfortable, reliable recordings in natural environments.

Dry EEG sensors
No need to apply electrolytic substances or saline solutions.

Advanced electronics
Active shielding with optimized DRL to improve SNR and reduce artifacts.

Wearable and comfortable
Fast and simple to set up. Participants forget that they are wearing it in a few minutes.

Flexible, adaptive Design
Adjustable arcs and sensor adjustments ensure the device adapts to head shape and hair volume, maintaining reliable contact in every recording.

Discover how **Bitbrain technology is applied across various research fields.**

For the online version, click here or scan the QR code if you're viewing the printed version.

Use Cases

Real-World Cognitive Insights

Evaluate and improve real-life workspaces by measuring workload, attention, or stress levels in natural conditions.

Measuring Customer Behavior

Evaluate the natural human behaviour of customers when interacting with marketing and communication materials, or new experiences.

Advancing Neurorehabilitation

Develop new therapies based on brain-computer interfaces for cognitive neurorehabilitation.

Technical Specifications

HARDWARE

SENSORS AND HEADSET

EEG channels	12x EEG (Fp1, Fp2, AF7, AF8, F3, F4, P3, P4, PO7, PO8, O1, O2) + REF (A1) + GND (Fpz)
Type of sensors/ electronics	Dry EEG sensors with active shielding and optimized DRL
Head perimeter	530–610 mm

WIRELESS AMPLIFIER

Sampling rate/resolution	256 SPS at 24 bits
Bandwidth	DC – 40Hz (3º order LPF)
Online/real-time impedance check	Yes (relative contact impedance)
Integrated sensors	Integrated IMU (9 axis): Accelerometer, gyroscope and magnetometer
Other inputs	1x digital input (1 bit), 1x optical trigger
Input range and noise	±100 mV; <1 µV RMS (0.5–30 Hz@256 Hz)
CMRR/Input impedance	>100 dB @50Hz, > 50 GΩ
Data backup	Yes (removable microSD card, up to 8GB, Class ≥ 10)

DATA STREAMING AND STORAGE

Data transmission and range	Bluetooth 2.1 + EDR with 10 meters in direct sight
Data files	CSV, EDF

POWER

Battery	Rechargeable LiPo battery; charging time <3 h
Autonomy	> 8 h

GENERAL

Weight	Amplifier: 120g
Warranty	2 years
Certifications	CE (Directive 2014/53)

SOFTWARE

BITBRAIN CORE RESEARCH SOFTWARE (INCLUDED WITH EQUIPMENT)

Bitbrain SennsLite
Real-time visualization, recording, and synchronized data across Bitbrain devices. LSL-compatible for third-party real-time I/O (BCI2000, OpenVibe, NeuroPype, Medusa). CSV and EDF export for Python (MNE), MATLAB (EEGLAB/FieldTrip/ BCILAB), and more.

Bitbrain SDK
SDK in C for maximum performance and portability enabling Python integration. Compatible with Windows OS and Linux (x86).

BITBRAIN EXTENDED RESEARCH TOOLS (LICENSED)

Bitbrain SennsLab
Synchronization software for experimental design and data collection, integrating 35+ sensor modalities (EEG, eye-tracking, biosignals). Compatible with third-party software via TCP/IP and CSV export.

Bitbrain SennsMetrics
Data analysis tool for emotional, cognitive, and behavioral metrics. Data are recorded with SennsLab, processed through SennsCloud, and analyzed and visualized in SennsMetrics.

BITBRAIN LABORATORIES

Human Behaviour Research Lab

Multimodal platform integrating Bitbrain EEG, biosignals, and Tobii eye-tracking with synchronized data acquisition, analysis, and visualization software, delivering cognitive, emotional, and behavioral biometrics.

- Diadem 12ch EEG
- Ring Biosignal GSR BVP
- SennsLab & SennsMetrics Software
- Tobii Pro Spark
- Tobii Pro Glasses

Technical Overview

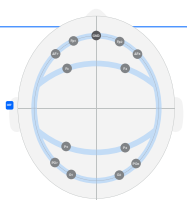
Wearable and ultralight (120g) EEG headset. Quick and easy set up anywhere, and under any circumstances.

Reliable dry-EEG monitoring with 24 bits at 256Hz for 8+ hours. Bluetooth streaming and/or on-board SD storage.

Clean technology that is **easy to transport and store.**

SENSOR LAYOUT

Layout optimized for frontal alpha asymmetry, occipital alpha -ERD/ERS, P300, N400 and CVN, among others.



BUNDLE INCLUDES

- EEG headset and amplifier
- Charger and adapter
- Headband stand
- 8GB Class-10 MicroSD card with SD adaptor

Bitbrain

We invite you to explore our scientific publications section.

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