

# Minimal EEG Diadem

Wearable dry-EEG headset optimised to monitor emotional and cognitive states in real-world applications with outstanding ease, comfort and reliability.



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Wearable dry-EEG device with sensors over frontal and posterior brain areas, and optimized for cognitive and emotional state estimation.



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

- **Mechanical support**  
Flexible arcs and sensor adjustments that ensure comfort, and can adapt to head morphology and hair volume.
- **Connectivity and storage**  
Bluetooth real-time EEG streaming and local SD storage.
- **Battery**  
8+ hours in streaming and in local SD storage.

## Some applications



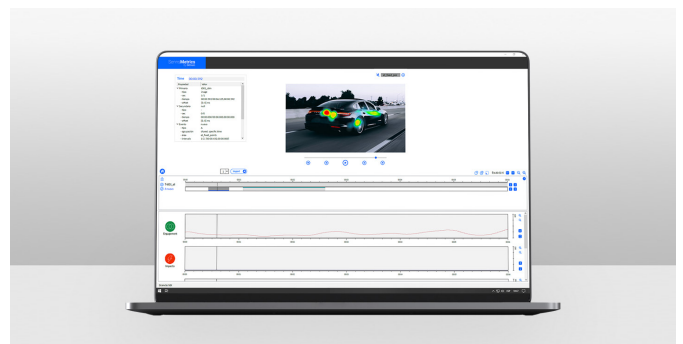
**Evaluate and improve real-life workspaces** by measuring workload, attention, or stress levels in natural conditions.



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

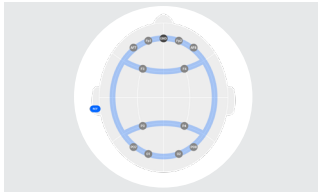


**Develop new therapies** based on brain-computer interfaces for cognitive neurorehabilitation.



Learn about neural correlates of human behaviour **in combination** with other biosensors, eye trackers, and more.

## Technical overview



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



Wearable and ultralight (185g) 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.

## Hardware specifications

Sensors and headset	
EEG channels	12 x EEG (Fp1, Fp2, AF7, AF8, F3, F4, P3, P4, PO7, PO8, O1, O2), REF (A1) and GND (Fpz)
Type of sensors/electronics	EEG dry sensors with active shielding and optimized DRL
Head perimeter	53cm - 61cm
Wireless Amplifier	
Sampling rate/resolution	256 SPS at 24 bits
Bandwidth	DC – 40Hz (3 <sup>rd</sup> order LPF)
Online/real-time impedance check	Yes (relative contact impedance)
Integrated sensors	Integrated IMU (9 axis): accelerometer, gyroscope and magnetometer
Other inputs	1 x Digital input (1 bit)/optical trigger (photodiode)
Input range and noise	± 100 mV, < 1 µVRMS (0.5 – 30Hz) @256Hz
CMRR / Input impedance	> 100 dB @50Hz, > 50 GΩ
Data streaming and store	
Data transmission and range	Bluetooth 2.1 + EDR, 10 meters in direct sight.
Data backup / files	Yes (removable micro SD card) / CSV (max 8GB. Class ≥ 10)
Power	
Battery	Rechargeable lipo battery. Charging time <3h
Autonomy	> 8 h
General	
Weight	Headset: 185g. Amplifier: 122g
Maintenance	Wipes moistened in tap water.
Warranty	2 years
Certifications	CE and CB, with EN 60950, EN 55032, EN 55024

## Software specifications

Bitbrain software kit (included with equipment)	
Bitbrain real-time SDK	In C/C++ with Python bindings for Windows and Linux
Bitbrain data acquisition and visualization suite	Live visualization, streaming or SD recording, data export in CSV, and raw data visualization.
Third parties real-time I/O	LabStreamingLayer LSL compatibility (Matlab, Python, BCI2000, OpenVibe, NeuroPyPe, etc).
Third parties data processing	Matlab (EEGLAB, FieldTrip, BCILAB, etc), Python (MNE, etc), and more.
Bitbrain software platforms (optional)	
Bitbrain Viewer Software	Software for data visualization and recording, with large compatibility with real-time I/O and data processing third parties.
Bitbrain Software Development Kit	Software kit consisting of different scripts that allow communication and control of the hardware used. It is a starting point for the development of brain-computer interface applications.
Bitbrain Human Behaviour Research Lab	Practical research platform for experiment design and data acquisition with 30+ sensor modalities seamlessly synchronized and analyzed with a wide range of emotional and cognitive biometrics available.

## Bundle includes

- EEG headset and amplifier
- Power supply
- Storage base
- Instructions
- Suitcase
- Bitbrain Software Kit

## Additional services

### Installation and Initial Training

Our team provides a training course that includes the installation of your EEG headset and software.

# Real-world research and applications



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