

ActiveThree

The third iteration of BioSemi's active EEG systems

Decreased size and weight due to new low-voltage design

Improved signal quality and intuitive design

Refined noise spectrum with new ADC technology



Overview

The BioSemi ActiveThree system is the third iteration of the company's celebrated active EEG systems. With the change to a new Analog-to-Digital Converter (ADC) technology, the system benefits from a cleaner frequency spectrum. Additionally, the inclusion of more power-efficient, low-voltage components result in the AD-box being able to function with significantly less power. This innovation allows for the use of a single replacable and rechargeable standard Li-ion battery, commonly used as flashlight batteries. Another new feature is the automatic detection of auxiliary sensors by the system, increasing usability of the system and making the setup a breeze. All of these improvements result in a smaller and more lightweight system that has improved features and offers researchers unsurpassed signal quality and superior EEG/EXG data.

System Features

- Cutting-edge SAR A/D converter technology for unsurpassed signal quality
- Low-voltage components for less energy consumption
- Commercially available Li-ion battery - type 18650
- Prolonged battery life: 10 hours (142 channels) - 20 hours (6 channels)
- Auto-detection of auxiliary sensors (GSR/EDA, RSP, TMP, etc.)
- 28 trigger lines (16 input, 12 output) on optical receiver
- Smaller form factor (162 x 149 x 62mm)
- Reduced weight (800g; including battery)

Technical Specifications

- Sample-rate: 16'384Hz (down-sampling available in software)
- Number of channels: 136 + 6 (auxiliary sensors)
- ADC: 24-bit SAR converter with 4x oversampling
- Bandwidth (-3dB): DC - 5.4kHz, 0.002dB ripple in passband
- Input range: +/-200mV (400mV Peak to Peak)
- Quantisation-resolution - LSB = 31.25nV, no missing codes
- Total input noise ($Z_e < 10k\Omega$), full bandwidth: 3uVRMS (approx. 20uV Peak to Peak)
- Common mode rejection ratio: > 100dB at 50Hz



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