

neuroConn closed-loop solutions for researchers

Simultaneous non-invasive brain stimulation (NIBS) and EEG paved the way for a better understanding of NIBS-induced local and network effects and the functional role of brain oscillations. Individual parameters, such as intensity, frequency and phase can influence NIBS outcome. Brain state-dependent NIBS enables researchers to manipulate those parameters and to influence brain activity with high temporal and spectral precision.

neuroConn-LOOP-IT

This hardware platform is perfect for scientific closed-loop experiments. It provides minimized constant delay between data acquisition, analysis, event detection and derived parameters for the output module (e. g. current source).

Features:

- supports combination of electrically independent modules with different functionality:
 - EEG/ECG/EMG biosignal acquisition (up to 16 ksp/s)
 - tDCS/ tACS/ tRNS current sources (low noise, > 10 mA_{pp}, > 2 kHz bandwidth)
 - multichannel digital I/O (e. g. for tES and TMS)
 - interface for active electrodes
 - sensor interface for non-electrical biosignals (e. g. pressure, breathing, blood flow, temperature)
 - evoked potential and display interface (e. g. for feedback applications)
- based on a real-time data processing platform
 - all modules run synchronized
 - simultaneous read/write-access to all modules
 - jitter-free data transceiving
 - loop delay can be set down to 100 μ s
- direct access to hardware parameters via supplied library (C#, java, MATLAB)
- medical-grade hardware design
- standard interface and compact design

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