

Measuring and Modulating Brain Activity



neuroConn  **NEURO PRAX[®] TMS/tES**

TMS/tES-compatible bio- and neurofeedback system

The NEURO PRAX[®] TMS/tES is a DC-EEG bio- and neurofeedback system. Biofeedback is a treatment method, based on operant conditioning. In this method the patients receive feedback about their physiological states and changes in these states, which mostly cannot be perceived by the patient. Slow Cortical Potential Neurofeedback (SCP-NF) is a kind of biofeedback and therefore a method in instrument-based behavioral therapy. SCP-NF allows the patient to perceive and self-regulate their brain activity. It is probably effective in the treatment of ADHD.

NEURO PRAX[®] TMS/tES systems measure physiological signals such as EEG, EMG, and EP simultaneously and synchronously for all channels. Unique amplifier technology captures EEG activity from ultraslow (0 - 0.3Hz) to ultrafast (80 - 1,200 Hz) frequencies. The high amplifier dynamics and the high sampling rate make the NEURO PRAX[®] TMS/tES system particularly suitable for EEG measurement during transcranial magnetic stimulation (TMS) and transcranial electrical stimulation (tES) with direct current (tDCS), alternating current (tACS), and random noise current (tRNS). Our high-performance full-band DC-EEG amplifiers are available with 32, 64 or 128 channels. They provide a wide range of optional software-based functions such as the online correction of artifacts caused by muscle and eye movements, topographical analyses, spectral and amplitude mapping and online averaging.

Areas of application/treatments

Neurofeedback	DC-EEG neuro- and biofeedback system, quantitative EEG, cognitive evoked potentials
TMS/MEP	MEP threshold detection, MEP brain mapping (via the TMS navigation system Brainsight [®])
TMS-EEG	Recording and analysis of cortical and subcortical TMS-EEG activities, examination of the functional connectivity between areas of the brain, examination of TMS-induced modulation of brain rhythms, EEG-triggered TMS stimulation

Moving thought

neuroCare 

NEURO PRAX[®] TMS/tES features

- 32-channel full-band DC-EEG bio- and neurofeedback system (64, 128 channels)*
 - Channel type (EEG, EMG, ECG) selectable via software
 - Non-referential storage of raw data
 - Specially for measuring during transcranial magnetic stimulation (TMS) and transcranial electrical stimulation (tDCS, tACS, tRNS)
 - Recovery time 3-5 ms after TMS impulse
 - Real-time correction of artifacts from TMS and electrodes
 - Suitable for polygraphy and polysomnography
 - Simple and intuitive user interface
 - EEG mountings and event markers freely selectable
 - Patient database with medication and examination calendar, complete documentation of readings
 - Topographical analysis, spectral and amplitude mapping
 - Connection of external triggers
- * optional

NEURO PRAX[®] TMS/tES specifications

full-band DC-EEG and BIOSIGNAL AMPLIFIER

- 32 full-band DC-channels (64, 128 channels)*
 - Input impedance > 10 GΩ
 - 24-bit resolution per channel
 - Selectable sampling rates of 64 to 4,096 sps
 - Frequency range of 0 to 1,200 Hz @ 4,096 Hz sampling rate
 - Common mode rejection rate (CMRR) > 90 dB @ 50 Hz
 - Dynamic input range approx. ± 219 mV
 - Input noise < 0.9 μV (RMS) @ 0 - 110 Hz at 256 sps
 - Max. power consumption 1.5 W
 - Power supply via built-in rechargeable batteries
 - Continuous operation time > 8h
 - Applied part BF
 - Dimension: 290 mm x 130 mm x 200 mm (W x D x H)
 - Weight: 4.2 kg (incl. batteries)
 - Data transmission via optical fiber
 - Electrode input box, incl. connector cable (32, 64, 128 channels)
- * optional

PANEL-PC

- Powerfull Intel[®] Core™ Duo processor, 1 GB RAM, 160 GB hard disc, USB2.0, ethernet interface (LAN), min. 15" TFT color monitor, keyboard, mouse
- Operating system WINDOWS[®] 7 (and later)
- Dimensions: 420 mm x 365 mm x 170 mm (W x D x H)
- Weight: 11.6 kg (incl. stand)
- Operating voltage: 110-240 V @ 50/60 Hz AC

NEURO PRAX[®] TMS/tES options and system extensions

- Module to correct EEG artifacts (blinking, eye movement, body movement) in real time (not with TMS)
- Module TMS-MEP threshold detection
- Module for cognitively evoked potentials: CNV, P300, ERN, CPT-OX, and readiness potential
- NEURO PRAX[®] TMS/tES examination license from other PCs
- Module for online data access via Ethernet by TCP/IP
- Export module for exporting measured data in other formats
- Module for data access within MATLAB[®]/Simulink[®], LabVIEW[®], C/C++
- Optical trigger input module system extension
- Feedback module system extension (additional monitor)
- Rechargeable battery pack
- Equipment trolley

