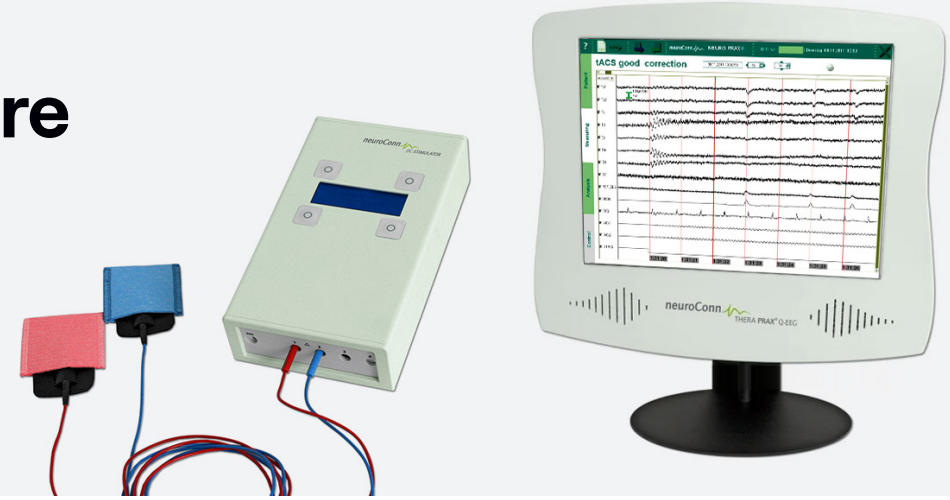
neurocare



EEG Measurement during tACS and tRNS

Combine DC-**STIMULATOR** PLUS and NEURO **PRAX**® TMS/tES for a unique system solution

neuroConn's full-band EEG system NEURO PRAX® TMS/tES measures EEG-signals during TMS (Transcranial Magnetic Stimulation) or tDCS (transcranial Direct Current Stimulation). This system now also measures undisturbed EEG signals during an oscillating neurostimulation with small alternating curents, known as tACS (transcranial alternating current stimulation) or tRNS (transcranial random noise stimulation). This is realized with an innovative and unique hard- and software that removes stimulation-induced noise from the EEG signal online and in real-time.

About tACS-EEG

tACS-EEG is a non-invasive and painless method to evaluate the modulation of cortical oscillatory brain activity and cerebral plasticity simultaneously with stimulation. Latest investigations in neuroscience provide a wide area of research topics for tACS-EEG such as:

- the modulation of oscillatory brain activity at a specific frequency,
- studying interactions between EEG rhythms of different frequencies,
- frequency tuning of cortical areas for optimal TMS,
- gaining knowledge on brain oscillations for basic science and for therapeutic application.

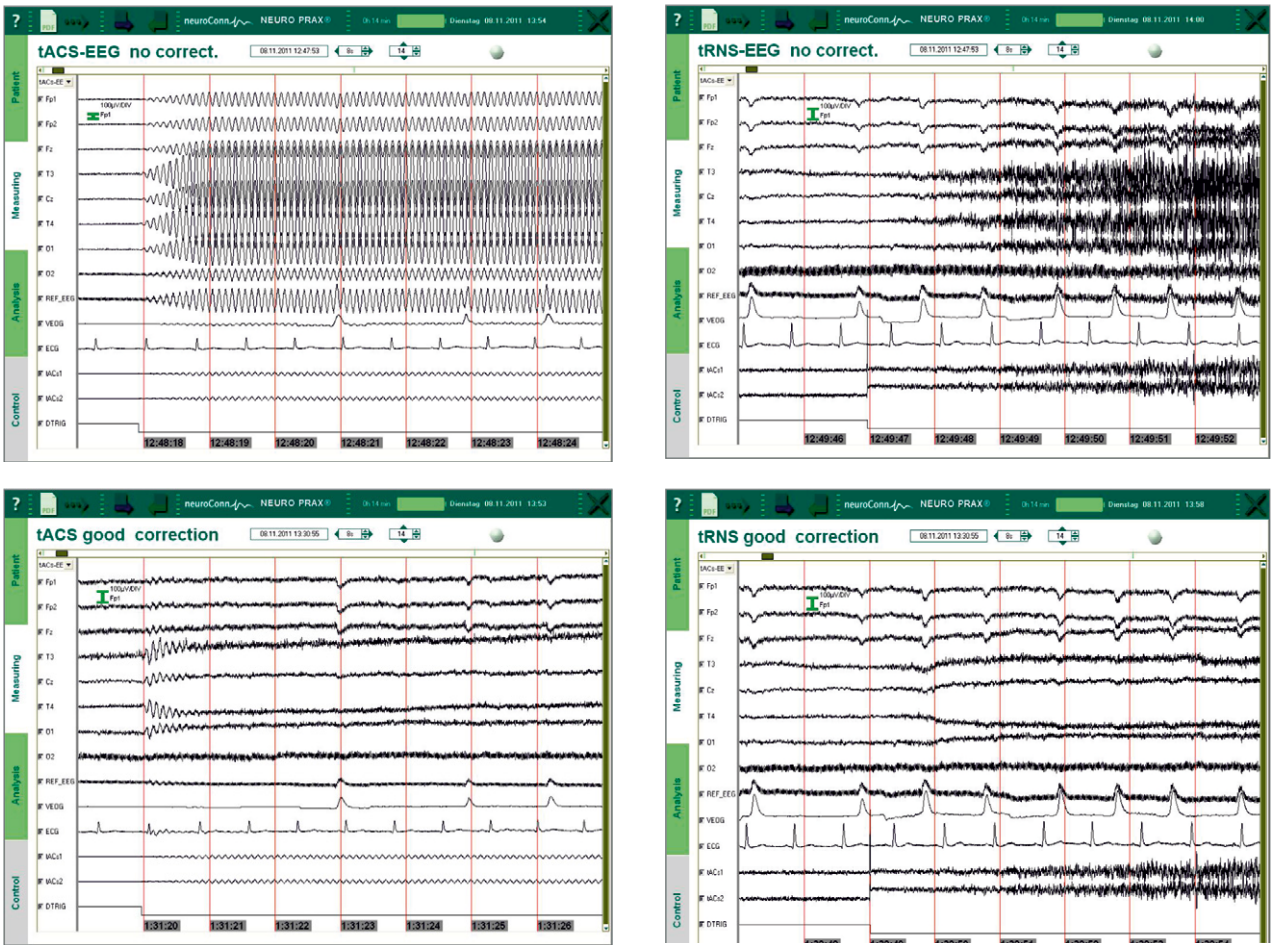
neuroConn technology for tACS-EEG

neuroConn's DC-**STIMULATOR** PLUS can be delivered with the optional SIGNAL OUT module, which provides a galvanically isolated reference signal.

A cable transfers the reference signal from the signal output of the DC-**STIMULATOR** PLUS to the EEG amplifier of the NEURO **PRAX**® TMS/tES.

NEURO **PRAX**® TMS/tES records the incoming reference signal. Its innovative ONLINE Correction software uses the reference signal to remove the artefacts induced by the stimulation from all EEG channels in real time.

DC-**STIMULATOR** PLUS:
back side with optional SIGNAL OUT module



Top: tACS-EEG (left) and tRNS-EEG (right) without correction. The stimulation signal overlays the EEG.
Bottom: Corrected tACS-EEG (left) and tRNS-EEG (right) after online elimination of stimulation-induced noise.

Important:

tACS-EEG is not possible with older versions of the neuroConn DC-**STIMULATOR** PLUS with a serial number < 1000.

Please contact us for an upgrade of your DC-**STIMULATOR** PLUS to the functionalities of the new generation and for the additional hardware module "SIGNAL OUT". If you have already purchased a neuroConn NEURO **PRAX**® TMS/tES, the software update for tACS-EEG correction is free.

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Courses for scientists offer in-depth knowledge on the scientific application of neuromodulation and its combinations with neuroimaging techniques, e. g. multichannel tES, EEG-TMS, EEG-tDCS, EEG-tACS and navigated TMS.
Furthermore, our experts provide technical supervision for your research and support you with their methodical expertise.

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