

## Measure EEG 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 neuro-stimulation with small alternating currents, 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:

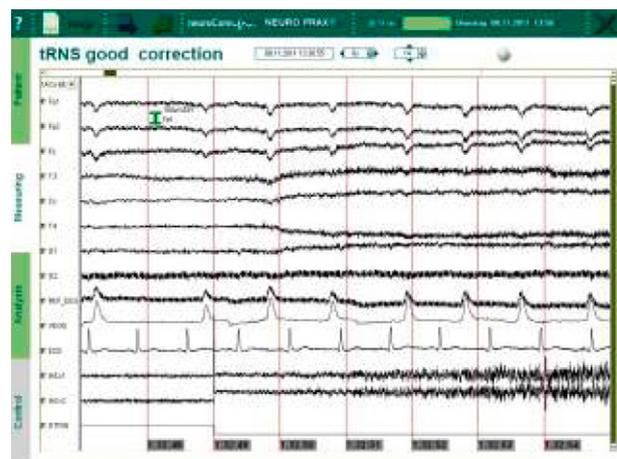
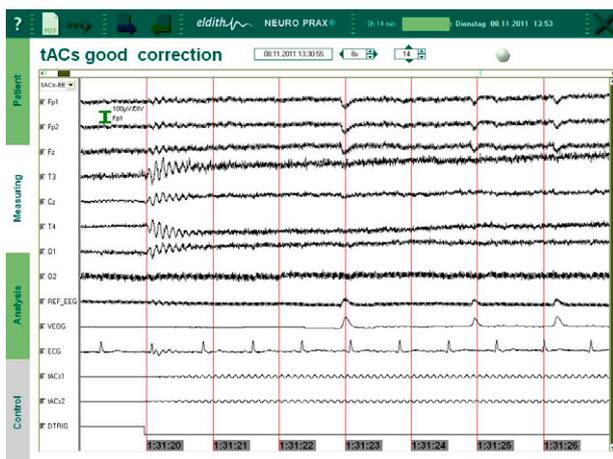
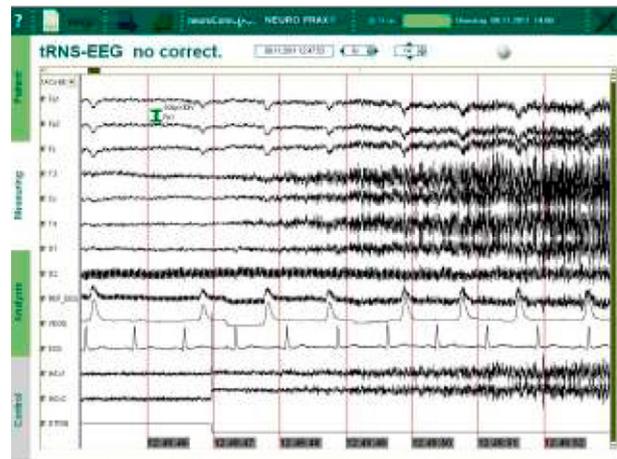
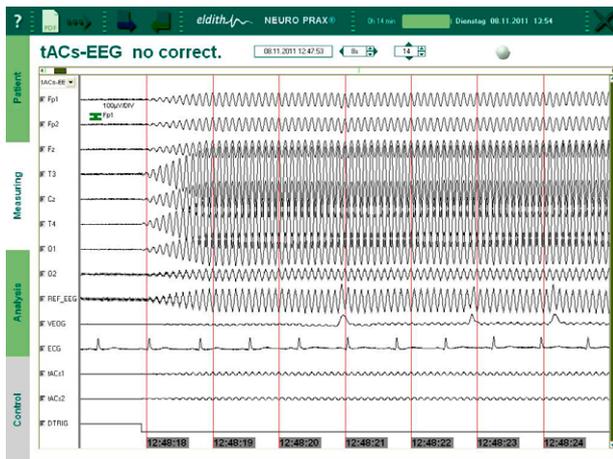
- the modulation of oscillatory brain activity at a specific frequency,
- studying interactions between EEG rhythms of different frequencies,
- frequency tuning of cortical areas for optimal TMS,
- gaining knowledge on brain oscillations for basic science and for therapeutic application.

### neuroConn technology for tACS-EEG

The new generation of 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.



**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.

We reserve the right to make changes and improvements in line with technical developments.

**Important:**

tACS-EEG is not possible with older versions of the neuroConn DC-**STIMULATOR PLUS** with a serial number < 1000. Please contact your local dealer 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. Please check [www.neuroconn.de/distributors/](http://www.neuroconn.de/distributors/) for the list of our distributors worldwide.

**Distributor:**



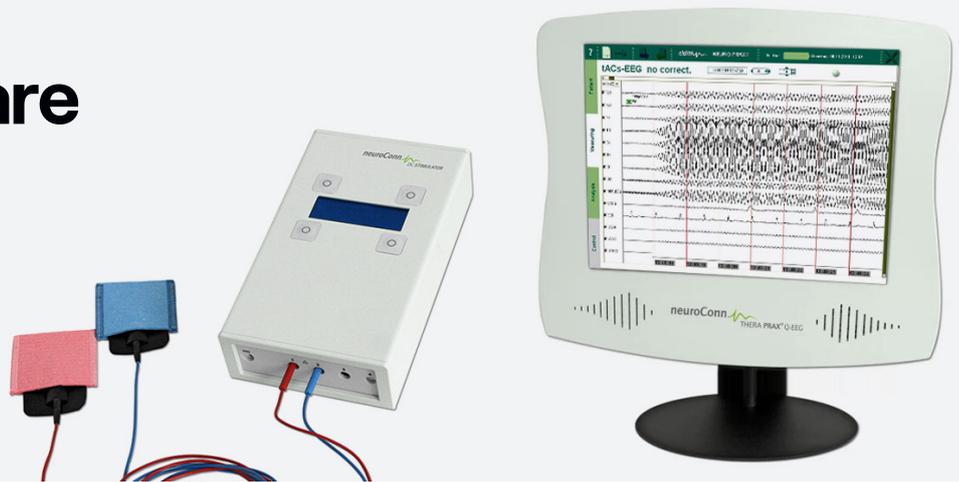
**Empowering best practice**

Through our global network of scientists, clinicians and engineers, we offer online theoretical courses which can be followed up by a practical training day onsite at neurocare, or by arrangement with your practice or institution.

Start an online course today by visiting [www.lms.neurocaregroup.com](http://www.lms.neurocaregroup.com)

**neurocare group AG**  
 Rindermarkt 7 | 80331 Munich | Germany  
 T +49 89 215 471 2995  
 sales@neurocaregroup.com  
 www.neurocaregroup.com





## Measure EEG 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 neuro-stimulation with small alternating currents, 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:

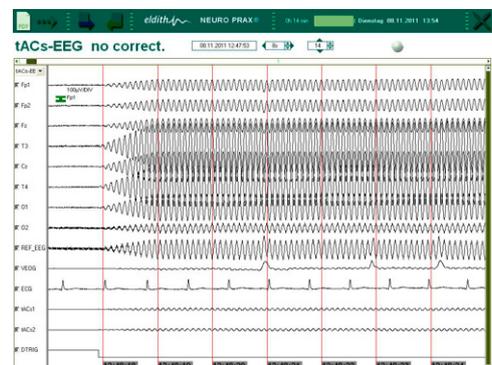
- the modulation of oscillatory brain activity at a specific frequency,
- studying interactions between EEG rhythms of different frequencies,
- frequency tuning of cortical areas for optimal TMS,
- gaining knowledge on brain oscillations for basic science and for therapeutic application.

### neuroConn technology for tACS-EEG

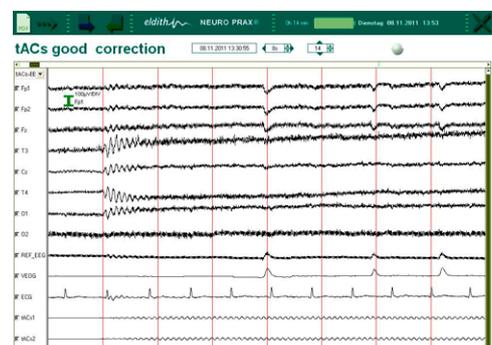
The new generation of neuroConn's DC-STIMULATOR PLUS can be delivered with the optional SIGNAL OUT module, which provides a galvanically isolated reference signal.

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.



tACS-EEG without correction. The stimulation signal overlays the EEG.



Correct tACS-EEG after online correction of stimulation-induced noise.