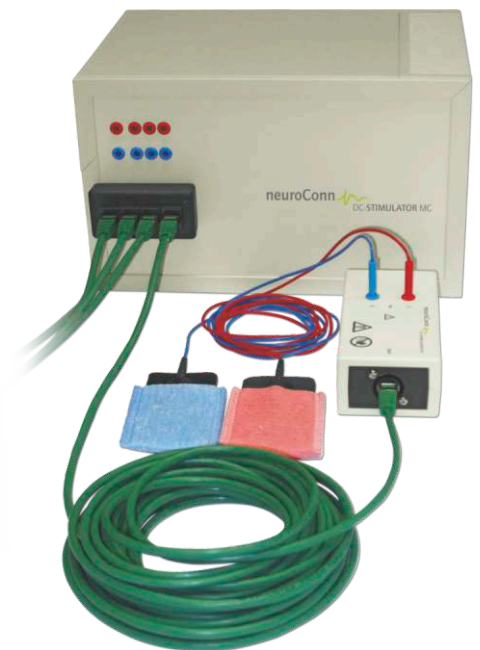


# Measuring and Modulating Brain Activity



## neuroConn DC-STIMULATOR MC

### Programmable, multi-channel direct, alternating and random noise current stimulator

The DC-**Stimulator** MC is a stimulator for use in scientific research that provides a stimulation using weak direct or alternating current (transcranial Electrical Stimulation tES) within non-invasive interventional Neurophysiology. The electrical charge and current density applied through a constant current source are far below the threshold for releasing a stimulus. Depending on the duration, the used current, the current density, and the frequency the stimulation has a modular effect on existing neuronal elements by either activating or inhibiting cortical activity.

The multi-channel DC-**STIMULATOR** MC allows computer-controlled, full-band stimulation from independent electrical sources using any desired signal type in the range of 0-1,000 Hz and currents of between 50-4,000  $\mu$ A with a freely adjustable phase. The DC-**STIMULATOR** MC can also be used during functional magnetic resonance imaging (fMRI) and, in addition, can be combined with the NEURO PRAX<sup>®</sup> TMS/tES allowing full-band DC-EEG to be recorded during multi-channel tES.

#### Areas of Application/Treatments

- |                                     |  |   |
|-------------------------------------|--|---|
| Research, hospitals and surgeries   |  | Controlled, monitored and simultaneous tDCS/tACS/trNS stimulation or sham stimulation of patient groups / multi-channel tDCS/tACS/trNS stimulation                  |
| Analysis and stimulation of the ROI |  | Software-controlled, multi-channel stimulation of selected regions of the brain and validation of tES with the help of functional magnetic resonance imaging (fMRI) |
| Analysis and stimulation            |  | Development and evaluation of user-specific stimulation sequences   |

Moving thought

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### DC-STIMULATOR MC Features

- 4/8 programmable, micro-processor-controlled constant current sources using independent channels (16 channels\*)
- For transcranial direct current stimulation (tDCS), transcranial alternating current stimulation (tACS), cranial electrical stimulation (CES), galvanic vestibular stimulation (GVS) and transcranial random noise stimulation (tRNS)
- 4/8 channels, capable of alternating current, bipolar stimulation possible (16 channels\*)
- Medical panel pc for the use and programming of stimulation modes and stimulation sequences
- Various types of stimulation can be selected and combined, continuous stimulation, cyclical switching on and off of stimulation, sinusoidal stimulation (up to 1,000 Hz)
- Import of any stimulation sequences into the software to control the DC-STIMULATOR MC with customer-specific signal sequences\*
- High safety standard through multistage monitoring of the current path
- External trigger input\*  
\* optional

### DC-STIMULATOR MC Specifications

- Currents and wave forms of up to  $\pm 4,000 \mu\text{A}$
- AC current adjustable up to  $8,000 \mu\text{A}$  (peak-to-peak)
- Frequencies of up to 1,000 Hz selectable and phase freely adjustable
- Freely selectable application duration
- 16-bit D/A conversion
- Time resolution  $< 1 \text{ ms}$  (sample rate 24,000 sps)
- Recording of stimulation sequences with 8,000 measurements/second
- Max. 1 % relative direct current fault tolerance
- Max. 0.02 % direct current fluctuation
- Current variance during stimulation  $< 0.02 \%$
- Voltage limit of 30 V
- Power supply via external medical power supply unit
- Dimensions: 420 mm x 395 mm x 170 mm (W x D x H)
- Weight: 4.2 kg

### fMRI Add-on for DC-STIMULATOR MC

- Use of the DC-STIMULATOR MC in fMRI
- No interference of the fMRI images during EPI sequence

### DC-STIMULATOR MC Option

- Trigger Out to control external devices
- Remote control of the DC-STIMULATOR MC\*
- Generation of arbitrary wave forms
- Stimulation via ROI as well as modelling of the current flow

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