

Neuro-MEP-Micro

version 2009

2-Channel Portable EMG and NCS System
with a Built-in Miniature Dedicated Keyboard



- Electroneuromyography: motor and sensory nerve conduction study (NCS), F-wave, H-reflex (also including paired stimulation), motor and sensory inching
- Electromyography: spontaneous activity, interference curve, motor unit potentials (MUP)
- Neuromuscular junction: repetitive stimulation, jitter (single fiber EMG)
- Motor unit number estimation (MUNE)
- Additional EMG techniques: blink reflex, sacral reflex, bulbocavernous reflex, T-reflex*, galvanic skin responses
- Somatosensory evoked potentials (SEP)
- Transcranial magnetic stimulation (TMS)**
- Heart rate variability (HRV)***

EMG and NCS system **Neuro-MEP-Micro** can be supplemented with **Neuro-EP** software and set of stimulators for short-, middle- and long-latency auditory, visual and cognitive (P300, MMN, CNV) EP study



- * if tendon hammer is available
- ** if Neuro-MS magnetic stimulator is available
- *** if corresponding accessories and software are available

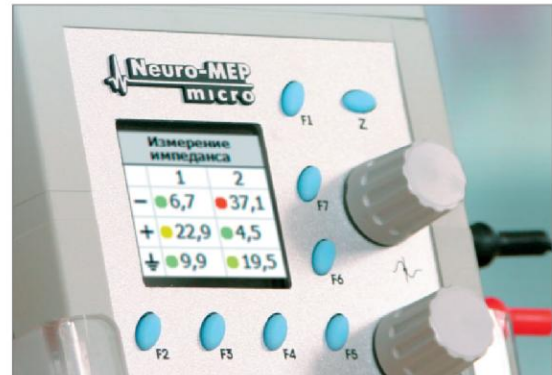
Medical Diagnostic Equipment Development and Manufacture

What's New?

High Quality of Acquisition

The device digitizes the incoming signals with 100 kHz sampling rate per channel at 24 bits ADC. It allows receiving high-quality traces in any conditions.

The speed and measurement accuracy of electrode impedance are also increased.



Electrical Stimulator with Ultra-fast Commutation for Two Outputs

Two software switchable outputs for the electrical stimulator connection allow a doctor to place two stimulating electrodes on a patient if it is necessary and connect them to the device. During the exam the reconnection of the electrodes is not required as the stimulating electrode is selected using the software.

To connect the stimulating electrode, you can use both touch-proof and DIN connectors.



Needle EMG: Now is Faster and with Higher Quality

Amplifier channels are optimized for needle EMG recording which allows increasing the noise immunity considerably, and so, the speed and quality of needle EMG acquisition.



New Options for Auditory and Photic Stimulation

- possibility of masking contralateral noise at auditory stimulation
- pattern-stimulator with the point for eyes fixation

Usability

The device is supplied with color graphic screen (resolution 128x128, dimensions – 1.5 inches). Thanks to it a doctor can track all the parameters and also check the electrodes placement quality during the test with stimulation.

The built-in dedicated keyboard is supplemented with 7 extra keys and joystick.

The possibility of operation with adjustable electro stimulating probe.



Neuro-MEP.NET Features

Electroneuromyography:

- recording and analysis of M-wave characteristics and sensory action potential
- evaluation of motor/sensory conduction velocity
- F-wave, H-reflex (also including paired stimulation) parameters study
- magnetic stimulation of spinal roots and peripheral nerves with the further classic analysis of motor response**
- blink reflex, sacral reflex, bulbocavernosus reflex, T-reflex*, galvanic skin responses
- possibility of detailed study of nerves and localization of conduction blocks using motor and sensory inching

Neuromuscular Junction Study:

- analysis of M-wave decrement during repetitive stimulation of motor nerve
- tetanization and posttetanic phenomena study
- user-defined stimulation algorithm creation
- study of single fiber action potential and jitter (single fibre EMG) phenomenon

Motor Unit Potentials (MUP):

- recording and analysis of spontaneous activity phenomena
- detection of MUP in automatic and manual modes
- automatic analysis of MUP parameters, determination of denervation-reinnervation process stage

Motor Unit Number Estimation (MUNE):

- recording and semiautomatic analysis with estimation of motor unit quantity by incremental technique and MUP decomposition

Spontaneous and Interference Electromyography:

- spontaneous activity
- turn-amplitude analysis of interference EMG
- amplitude-frequency analysis of interference EMG
- spectrum analysis of interference EMG
- rectified EMG
- EMG sound playback

Transcranial Magnetic Stimulation (TMS)**:

- determination of central motor conduction time of patients suffering from nervous system demyelinating diseases, in particular, multiple sclerosis
- automatic calculation of root delay at F-wave and magnetic stimulation combined study

Somatosensory Evoked Potentials (SEP):

- short- and long-latency SEP

Cognitive Evoked Potentials (CEP):

- cognitive evoked potentials (P300, MMN (mismatch negative), CNV (contingent negative variation) recording
- use of stimuli of any modality

Auditory Evoked Potentials (AEP)***:

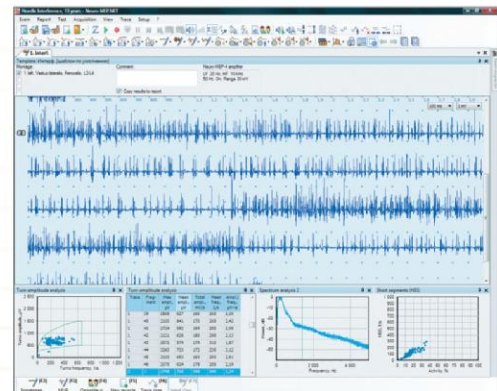
- recording of short-latency (brainstem), middle- and long-latency AEP
- objective audiometry

Vestibular Evoked Myogenic Potentials (VEMP)***:

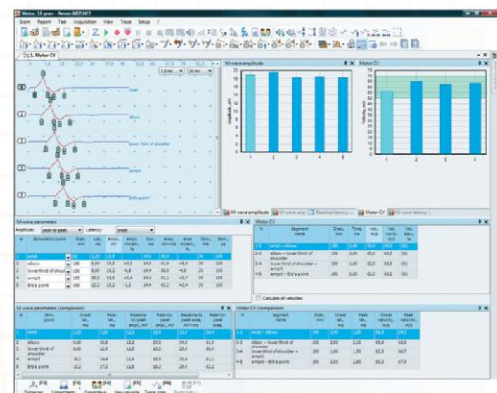
- recording of VEMP in patients with Meniere's disease, superior canal dehiscence, vestibular neuritis, multiple sclerosis, migraine, spinocerebellar degeneration

Visual Evoked Potentials (VEP)***:

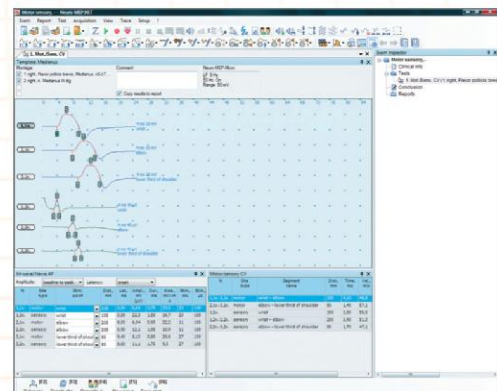
- recording of flash visual evoked potentials
- recording of reversal pattern visual evoked potentials



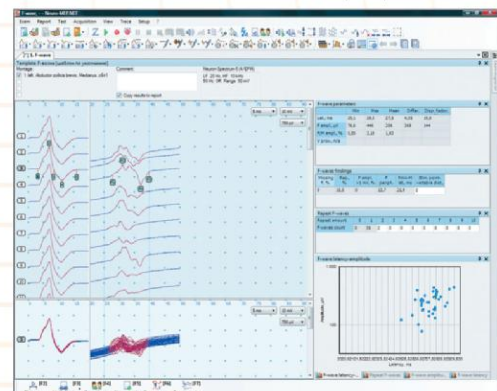
Interference EMG



Motor NCV



Combined NCV test (motor and sensory responses)

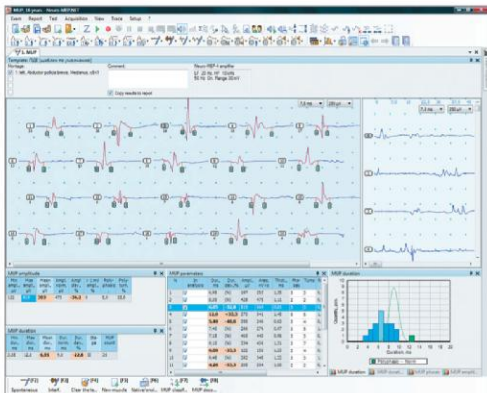


F-wave

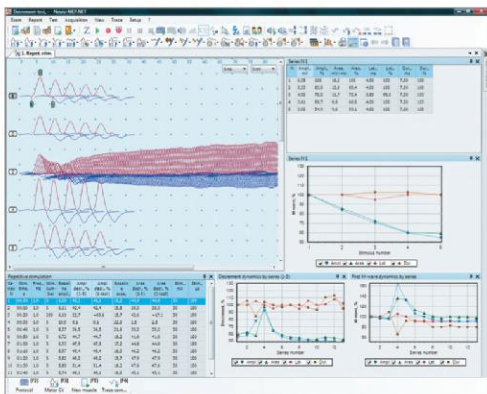
* if tendon hammer is available

** if Neuro-MS magnetic stimulator is available

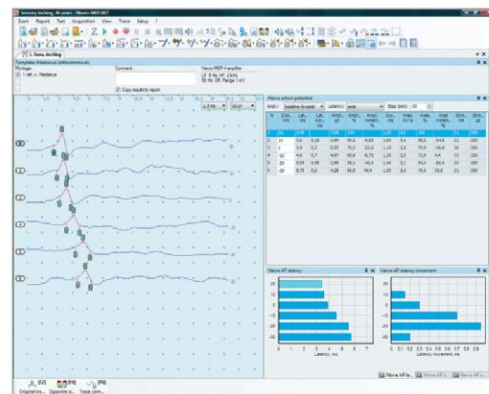
*** if corresponding accessories and software are available



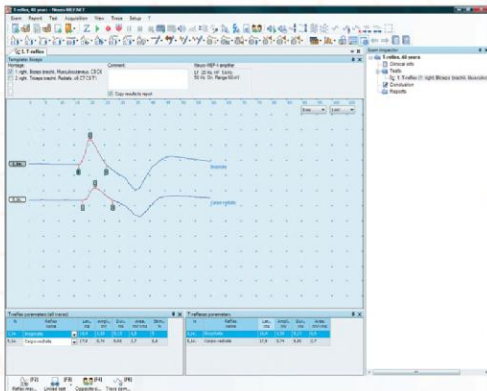
MUP



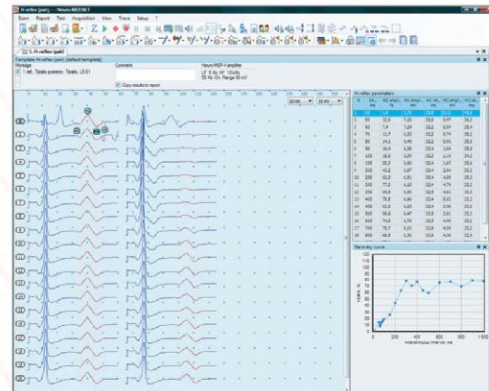
Jitter (single fiber EMG)



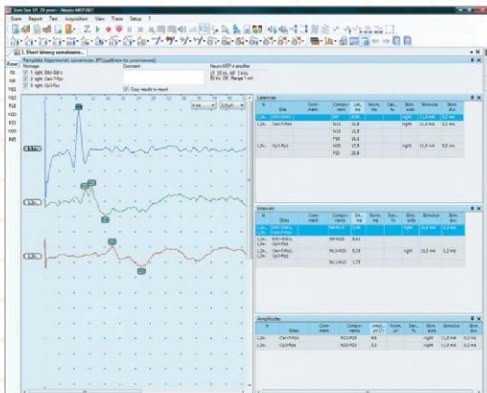
Repetitive stimulation



Sensory inching

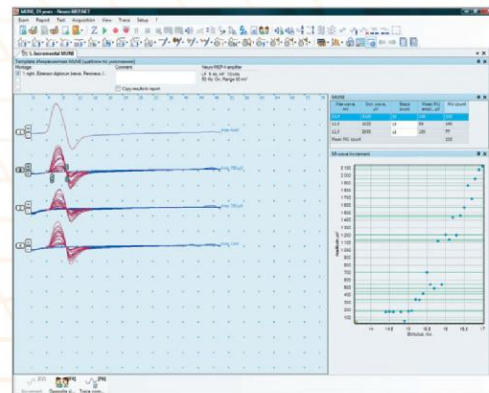


T-reflex



SEP

H-reflex (paired stimulation)



Incremental MUNE

Base Delivery Set

- Electronic unit
- Small table holder
- Slider for **Neuro-MEP-Micro**
- Set of EMG electrodes
 - Surface electrode SE-1 (2 pcs.)
 - Bar electrode (adult) BE-2
 - Bar electrode (pediatric) BE-1
 - Ring electrode (wide) with cable RE-2
 - Ground electrode with cable (pediatric) GE-1 (250 mm)
 - Ground electrode with cable (adult) GE-2 (400 mm)
 - Reusable concentric needle electrode (2 pcs.)
 - Adapter for needle electrode connection
 - Disposable surface electrode (set of 100 pcs.)
 - Adapter for disposable electrodes connection with Alligator clip (20 cm) – 2 pcs. (red and black)
- Cup EP electrode with cable – 5 pcs.
- Stimulating bar electrode with replaceable steel and felt stimulation pads (adult) SBE-2
- Pup-jack linker
- Measuring reel
- Electrode adhesive paste (100 g)
- Abrasive paste for skin preparation (160 g)
- Electrode gel (bottle with dispenser 250 g)
- Software
- User and technical manuals



According to safety standards all the computer equipment used with EMG/NCS system should be connected via isolation transformer

Extra Delivery Set

- Adjustable electro stimulating probe
- Footswitch
- Tendon hammer
- Temperature sensor
- Patient button
- **Neuro-EP** – software and equipment for short-, middle- and long-latency auditory, somatosensory, visual and cognitive (P300, MMN, CNV) EP study
- Auditory stimulator (headphones)
- Visual stimulator (LED goggles)
- Adapter for pattern-stimulator connection
- Isolation transformer TM-630
- **Neuro-ERG** – software and equipment for electroretinography (ERG) and electro-oculography (EOG) study
- **Poly-Spectrum-Rhythm/MEP** – software and equipment for heart rate variability (HRV) analysis

Optional Features



Adjustable Electro Stimulating Probe

This easy-to-use probe allows you to carry out all the necessary actions holding the device in one hand.

Press the buttons on the front panel and start either single or repetitive stimulation.

Turning the wheel under the stimulation start buttons, adjust the pulse amplitude.

Switch the polarity by the buttons on the side panel. The active electrode is indicated by the LEDs on the front panel.

Press the side button and change the angle (5 positions in 30° increments).

Put the steel stimulation point in another socket and change the distance.



Footswitch

The use of the footswitch simplifies greatly the process of EMG study. The footswitch makes it possible to start the stimulation or to stop it with or without saving the results. So the hands are free for the manipulations with electrodes and control of other operating parameters.

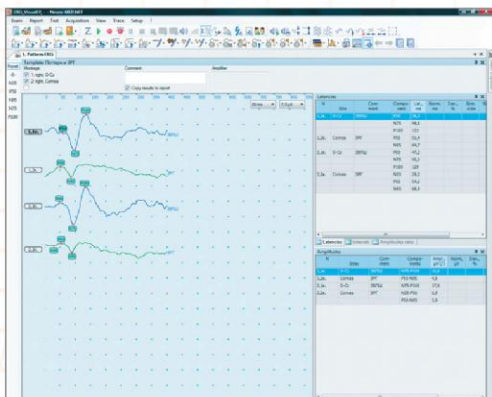
The footswitch is connected to the computer via USB interface.



Tendon Hammer

Electronic tendon hammer for T-reflex study:

- analysis of tendon reflex condition
- study of masseteric reflex, reciprocal interrelations on intersegmental level
- complex study of root conduction



Neuro-EP

Software and equipment for EP study:

- short- and long-latency somatosensory evoked potentials (SEP)
- cognitive evoked potentials (P300, MMN, CNV)
- short-latency (brainstem), middle- and long-latency auditory evoked potentials (AEP)
- vestibular evoked myogenic potentials (VEMP)
- flash visual evoked potentials (VEP)
- reversal pattern visual evoked potentials (VEP)



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