

Additional Features



Two Modifications

Neuro-MEP digital EMG and EP system is supplied in two modifications: 4-channel **Neuro-MEP-4** and 8-channel **Neuro-MEP-8**.



Dedicated Keyboard with Clamp

New dedicated keyboard allows to realize maximally all the conveniences of operation on new software developed on .NET platform.

The dedicated keyboard is notable for compact size and ergonomics, due to them and also use of hotkeys for main functions, encoders and joystick it is possible to manipulate checkup parameters quickly and conveniently.

The keyboard can function via Bluetooth or USB interface. Reliable and stable functioning of the keyboard in this mode is provided by the built-in rechargeable battery with the possibility of its charging via USB port of the computer.

The clamp excludes the undesired movements of the keyboard during the working process and certainly, it will be very convenient for any doctor.

You can easily fix and remove the keyboard thanks to the clamp magnets.



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.



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



Footswitch

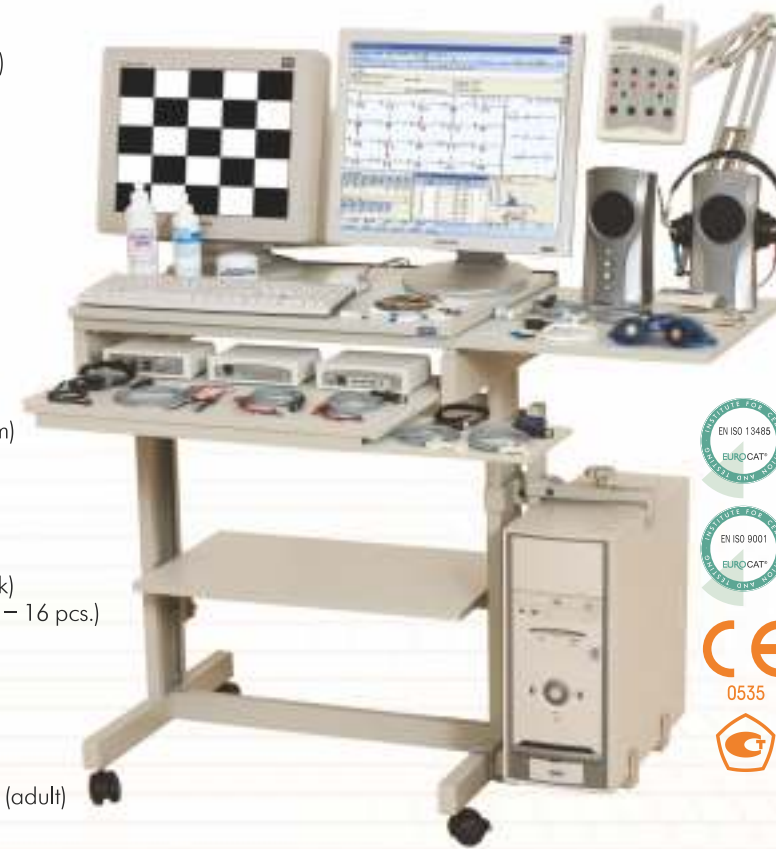
The use of the footswitch simplifies greatly the process of EMG study. The footswitch makes it possible to start the stimulation or to stop it with or without saving the results. So the hands are free for the manipulations with electrodes and control of other operating parameters.

The footswitch is connected to the computer via USB interface.

Base Delivery Set

Two delivery set variants are available, these are **4-channel Neuro-MEP-4** and **8-channel Neuro-MEP-8**

- **Neuro-MEP** amplifier unit (for **Neuro-MEP-8** – 2 pcs.)
- Holder
- Cleat for two amplifier units fixation on holder (only for **Neuro-MEP-8**)
- **Neuro-MEP** auditory-visual stimulator unit
- **Neuro-MEP** electrical stimulator control unit
- Patient button
- USB-hub
- Set of EMG electrodes:
 - Surface electrode – 2 pcs.
 - Bar electrode – 2 pcs. (pediatric and adult)
 - Stimulating bar electrode with replaceable steel and felt stimulation pads (adult)
 - Ring electrode with cable
 - Ground electrode with cable (pediatric) (250 mm)
 - Ground electrode with cable (adult) (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 electrode with cable – 8 pcs. (for **Neuro-MEP-8** – 16 pcs.)
- Pup-jack linker – 2 pcs. (for **Neuro-MEP-8** – 5 pcs.)
- Set of stimulators:
 - Visual stimulator (LED goggles)
 - Visual pattern-stimulator (monitor 15)
 - SVGA cable
 - Auditory stimulator (headphones) TDH-39
 - Stimulating electrode with steel stimulation pads (adult)
- Loudspeaker – 2 pcs.
- Measuring tape
- Electrode adhesive paste (100 g)
- Abrasive paste for skin preparation (160 g)
- Electrode gel (250 g)
- Software
- User and technical manuals
- Transportation bag



trolley is not included in the delivery set



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

Extra Delivery Set

- Dedicated keyboard
- Clamp for dedicated keyboard
- Footswitch
- Tendon hammer
- Adjustable electro stimulating probe
- Adapter for high resolution pattern-stimulator connection
- Temperature sensor
- **Neuro-MS** – magnetic stimulator for diagnostic and therapeutic exposure on cerebral cortex motor zones, stimulation of spinal cord and peripheral nervous system
- **Neuro-ERG** – software and equipment for electroretinography (ERG) and electro-oculography (EOG) study
- **Poly-Spectrum-Rhythm** – software and equipment for heart rate variability (HRV) analysis



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Neuro-MEP

Digital EMG and EP System



With new software on .NET platform

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)
Visual evoked potentials (VEP)
Brainstem, middle- and long-latency auditory evoked potentials (AEP: BAEP, MLR, LLR)
Vestibular evoked myogenic potentials (VEMP)
Cognitive evoked potentials (CEP)
Transcranial magnetic stimulation (TMS)**
Intraoperative monitoring (IOM)
Heart rate variability (HRV)***
Objective audiometry
Electroretinography (ERG)***
Electro-oculography (EOG)***



Medical Diagnostic Equipment Development and Manufacture

Neuro-MEP Advantages

Modular Architecture with the Use of USB Technology

All the electronic units included in the device delivery set are connected to computer with the use of USB interface. It allows combining them flexibly to arrange a configuration corresponding to your own requirements.

For example, if you connect one more 4-channel amplifier unit to **Neuro-MEP-4**, you will get 8-channel digital system. It is possible to connect up to 10 (!) different USB units.

Set of EMG Electrodes of New Generation

Now new EMG electrodes developed by our company are supplied with the digital EMG and EP system. They correspond to modern requirements.

In the picture: stimulating bar electrode with replaceable steel and felt stimulation pads (adult).

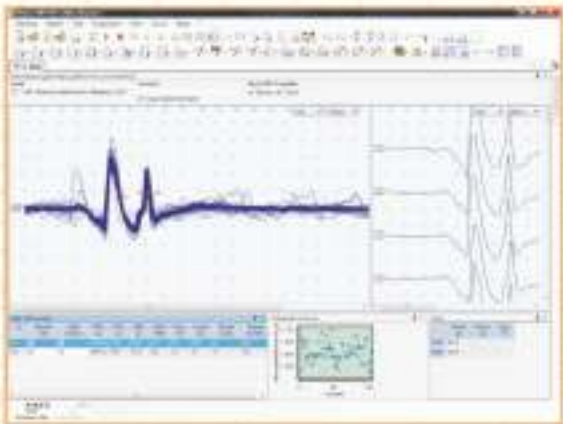
The set of replaceable stimulation pads from steel and felt of different types is available. It can be used as both stimulation and surface electrodes.

Software on .NET Platform

Neuro-MEP software is developed on .NET platform. It is the most modern technology for software development. The use of .NET allows increasing the time of creation and the level of software reliability considerably, using the modern and convenient interfaces, and also enhances the device capacities to the maximum.

New EMG Techniques

- The list of EMG techniques is enlarged by:
- motor and sensory inching
 - jitter (single fiber EMG)
 - sacral reflex
 - bulbocavernous reflex
 - T-reflex*
 - vestibular evoked myogenic potentials (VEMP)
 - automatic detection of MUP
 - motor unit number estimation (MUNE)
 - conduction velocity combined test (motor/sensory response)
 - registration and analysis of spontaneous activity and interference EMG in one test



Neuro-MEP.NET Features

Electroneuromyography:

- registration 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, bulbocavernous reflex, T-reflex*, galvanic skin responses
- motor and sensory inching

Motor Unit Potentials (MUP):

- registration 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):

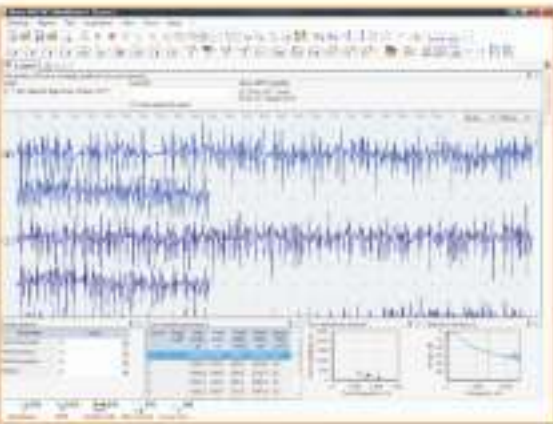
- registration and semiautomatic analysis with evaluation of motor unit number by incremental technique

Neuromuscular Junction Study:

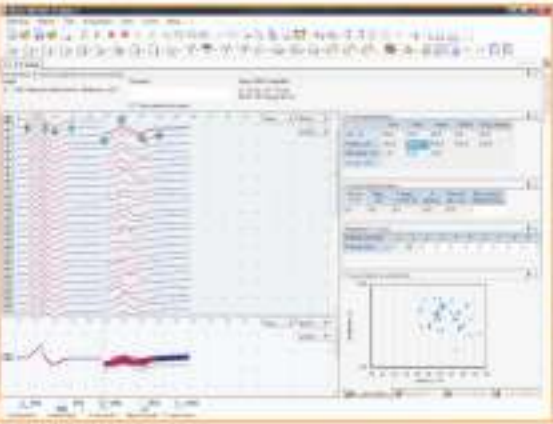
- analysis of M-wave decrement during repetitive stimulation of motor nerve
- tetanization and posttetanic phenomena study
- user-defined stimulation algorithm creation

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



Interference EMG



F-wave

Transcranial Magnetic Stimulation (TMS)**:

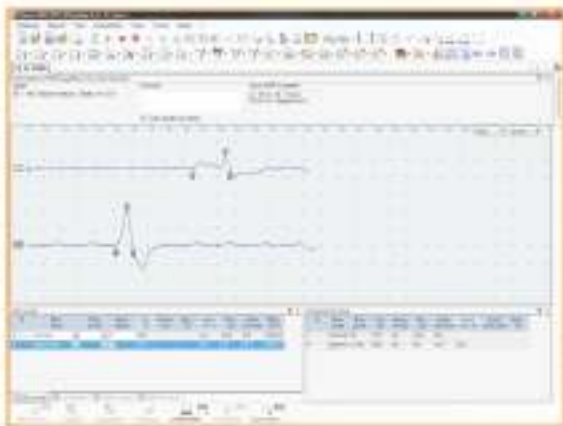
- determination of central motor conduction time of patients suffering from nervous system demyelination diseases, in particular, multiple sclerosis
- automatic calculation of root delay at F-wave and magnetic stimulation combined study

Somatosensory Evoked Potentials (SEP):

- short- and long-latency SEP

Visual Evoked Potentials (VEP):

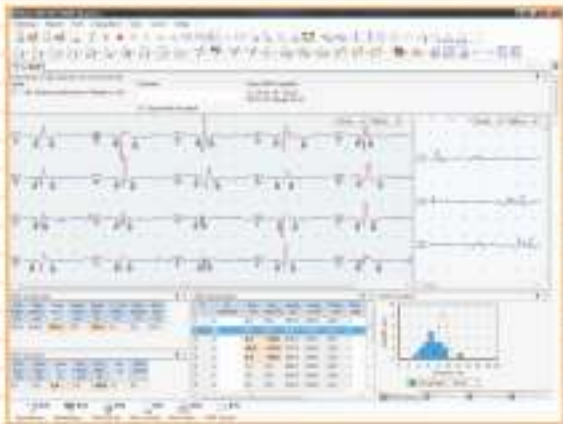
- registration of flash visual evoked potentials
- registration of reversal pattern (checkerboard, with horizontal/vertical bars, or arbitrarily generated image) visual evoked potentials



TMS



NCS. Sensory conduction velocity



MUP

Auditory Evoked Potentials (AEP):

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

Cognitive Evoked Potentials (CEP):

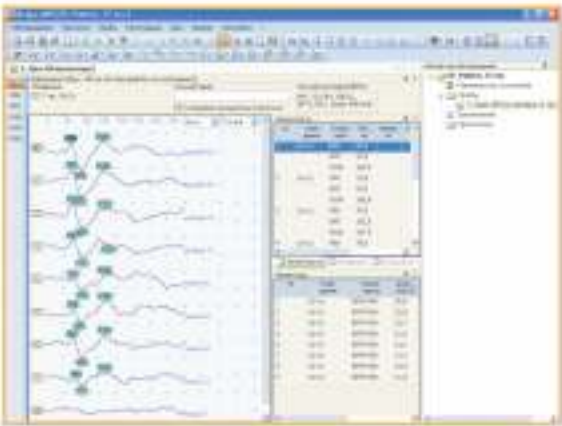
- cognitive evoked potentials (P300, MMN (mismatch negative), CNV (contingent negative variation) registration
- use of stimuli of any modality

Vestibular Evoked Myogenic Potentials (VEMP):

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

Transient Evoked Otoacoustic Emission (TEOAE)***:

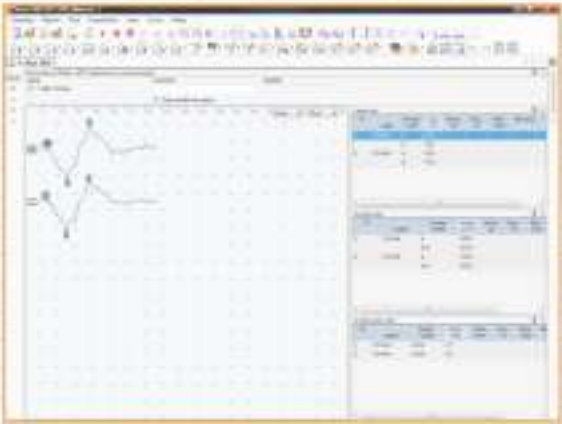
- transient evoked otoacoustic emission registration for estimation of the cochlea state on the Corti's organ level



Reversal pattern VEP



Cognitive EP P300



Maximal ERG

Electroretinography***(ERG):

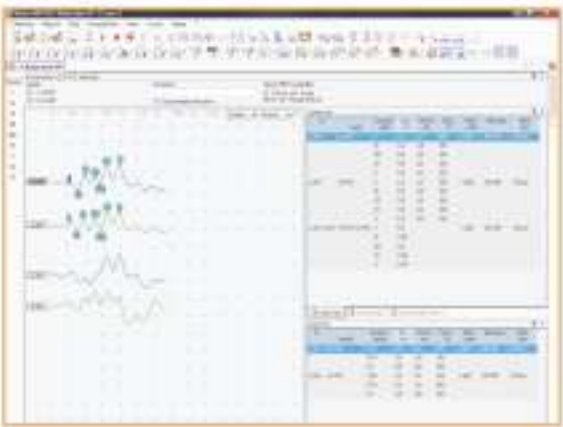
- ERG registration using ganzfeld stimulator, and different intensity white, red, blue, green colors and reversal pattern
- registration of cone, rod, maximal, local, rhythmical ERG and oscillatory potentials
- ERG on long stimulus (on/off electroretinography)
- electro-oculogram registration

Heart Rate Variability (HRV)***:

- frequency-domain analysis of heart rate
- cardiovascular reflex tests performing



SEP



Short-latency AEP



HRV

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