

# Neuromyoanalyzer NMA-4-01 "Neuromyan"

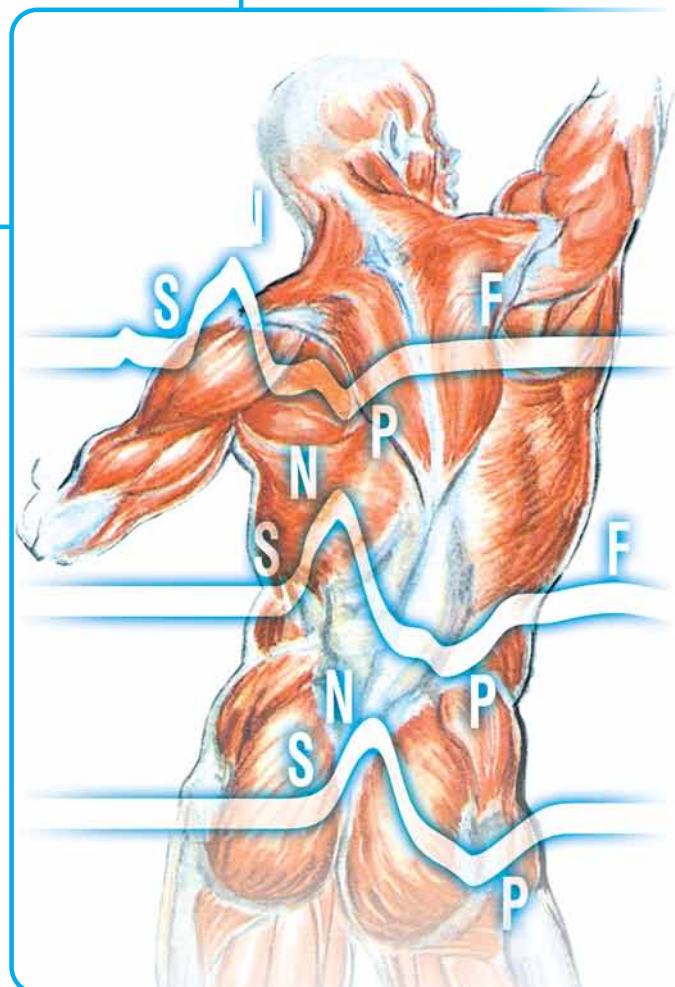


Meant for use in neurological and neurophysiological departments, sport medicine and scientific research



## Electroneuromyograph with option of brain evoked potentials study

- 2, 4 or 5-channel modifications or different software versions provide both inexpensive and elite expert class devices.
- Present-day development of electronics and wireless technologies provides quality record of myographic signals and evoked potentials, and guarantees comfort for a doctor during studies carrying out.



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**Wide range of functional capabilities is determined by combination of software variants and neuromyograph's modification**

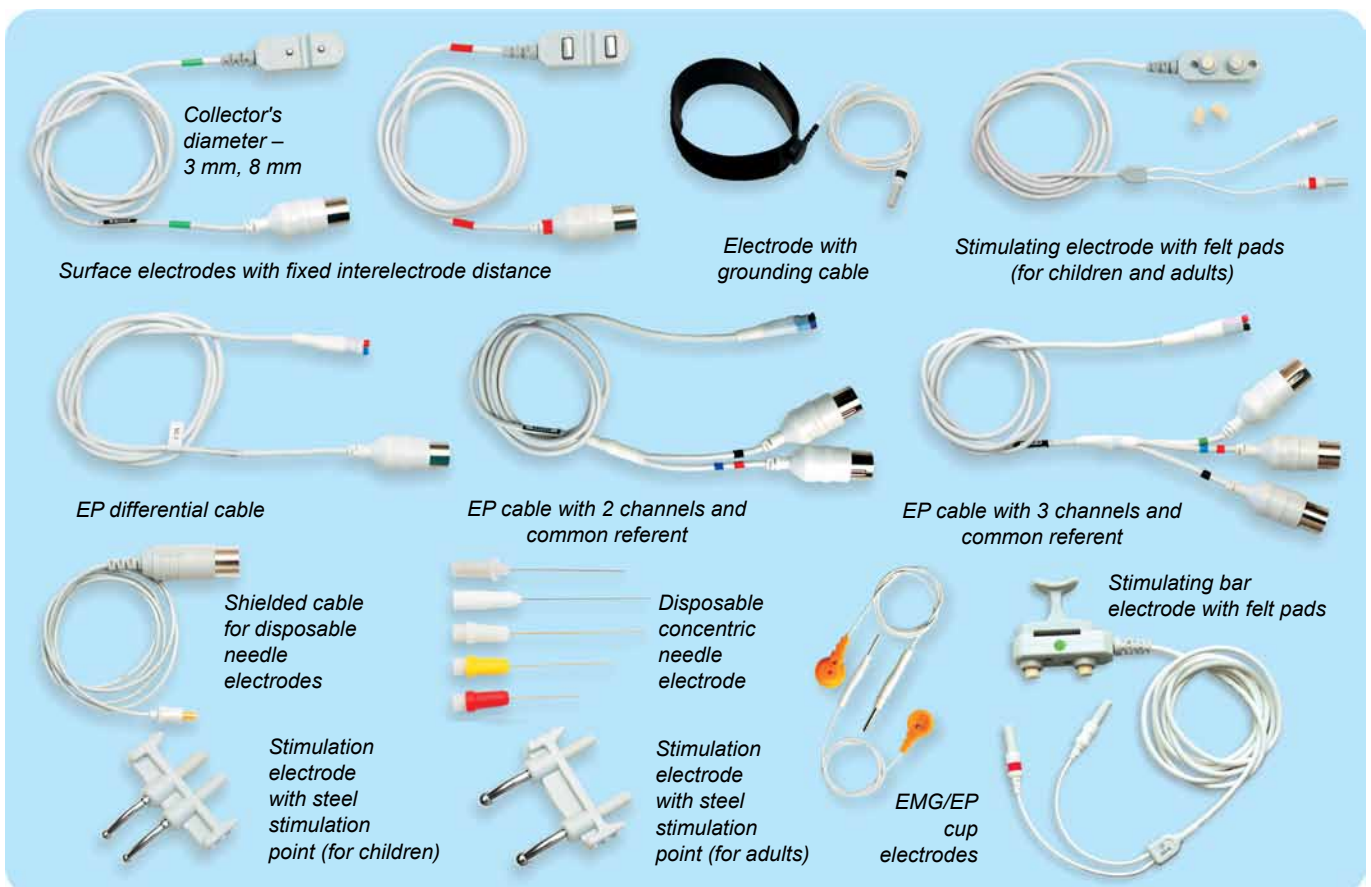
**Main technical characteristics**



- 2, 4 or 5 galvanically insulated EMG and EP amplifiers;
- USB interface for PC communications;
- Wireless interface to control footswitch, remote controller and chess pattern generator;
- Generators of photo-, phono- and electrostimulation signals;
- In/out of synchronization for connection of magnetic stimulator and other devices;
- Sampling rate – up to 200 kHz per channel;
- AD converter – 16 bit;
- Sensitivity: 0,2 – 10 000  $\mu\text{V}$  /grade (15 grades);
- Input impedance: 100/20 M $\Omega$  / pF;
- Noise level maximum (RMS) 0,6  $\mu\text{V}$  within the frequency band 10 Hz – 10 kHz;
- Disconnectable adaptive filter of power line disturbances;
- Common mode rejection ratio minimum 110 dB at 50 Hz frequency;
- Passband lower limit : 0,01 – 300 Hz;
- Passband upper limit: 10 Hz – 20 kHz.

**Neuromyoanalyzer is manufactured in 3 modifications**

**Sensors and electrodes**



**Wireless connection of patient transceiver-recorder with remote controller, pattern-stimulator and footswitch decreases the number of wire connections and increases comfort for patients and doctors during study carrying out**

### Remote controller (RC)

Not using a PC mouse and a keyboard simplifies carrying out repeated standard studies

- Functions as a traditional keyboard of neuromyograph and electrostimulator's handle at the same time;

- "Quick start" of a new examination program using RC speeds up the analysis of combined and symmetrical nerves and muscles;

- Buttons and wheel-regulator of RC are of different functional purpose for each examination program, which allows optimizing main actions carrying out.



In Medicom MTD only!

Managing neuromyograph with remote controller is as easy as managing a cell phone

### Wireless footswitch



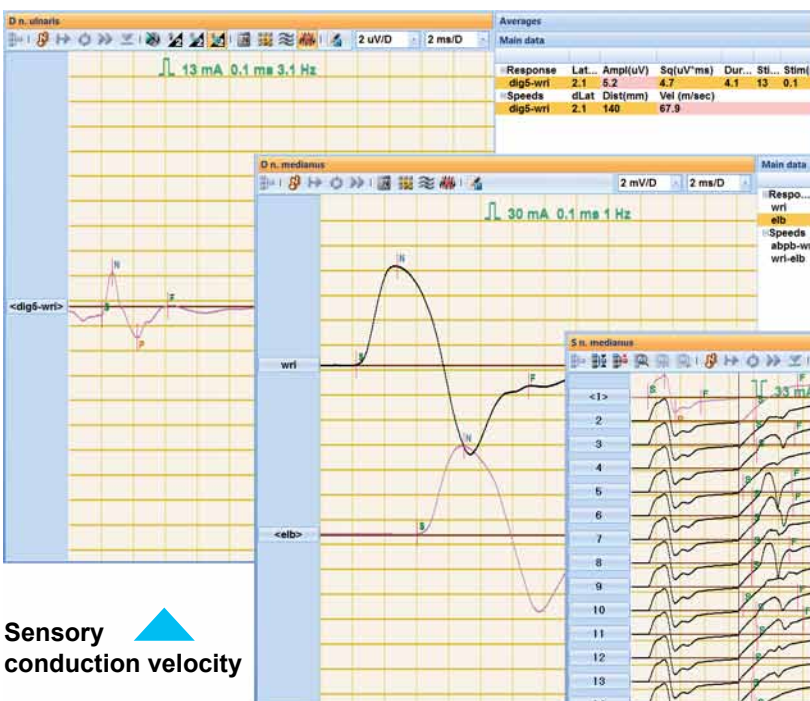
- Use of a wireless footswitch simplifies a myographic study progress;

- Switch allows controlling data record modes and stimulation, making doctor's hands free for electrode manipulations.

### Options for delivery set:

- reflex hammer;
- skin temperature sensor;
- audiometric headphones TDH-39;
- magnetic stimulator for diagnostics and therapeutic treatment of motor cortex zone, stimulation of spinal cord and peripheral nerve system.

### Basic examination programs of electromyographic studies



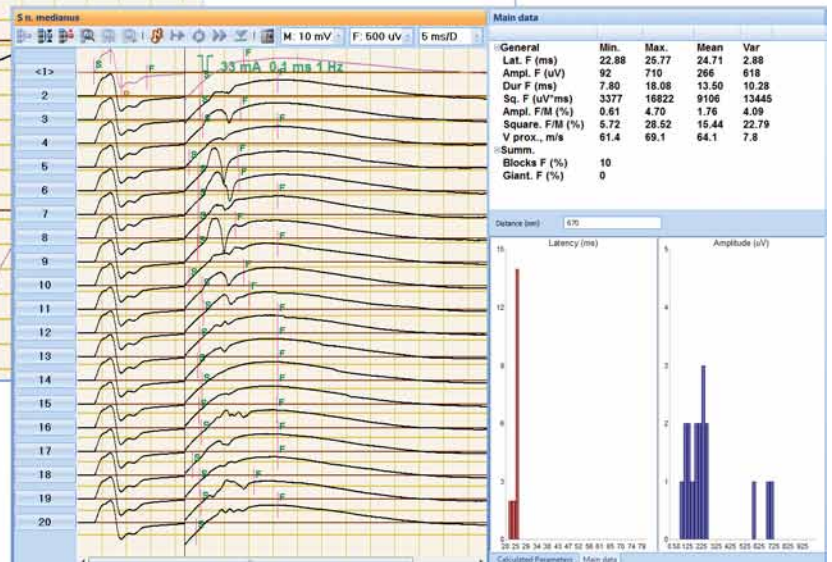
Rejection algorithm of stimulation artifacts provides record of short nerves responses.

Motor conduction velocity

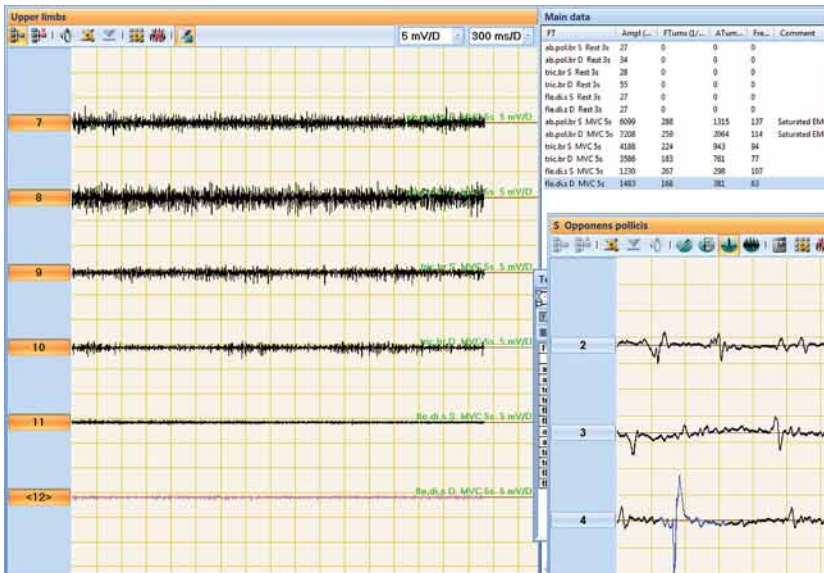
F-wave

Sensory conduction velocity

Integral tables display the quantity and results of tests carried out, which allows a doctor to define the necessity of carrying out and selection of further tests.



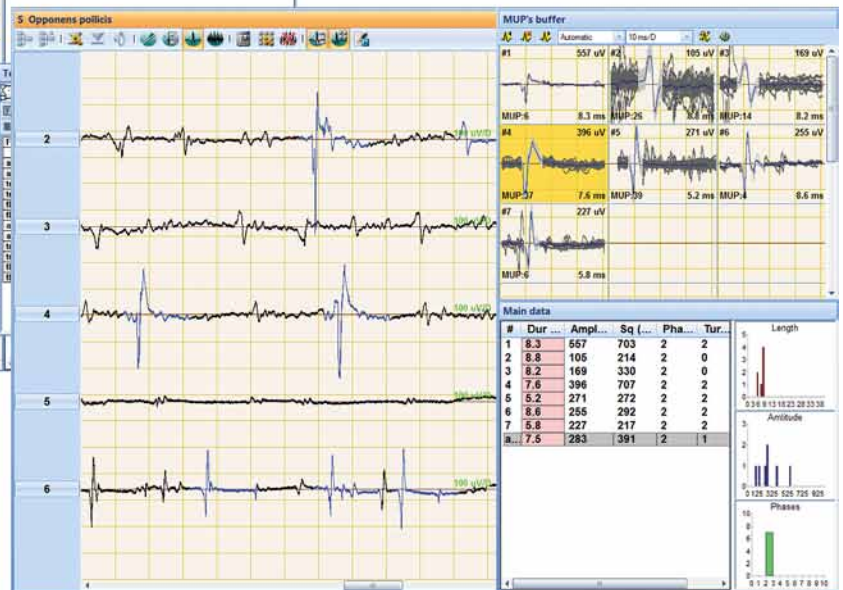
## Basic examination programs of electromyographic studies



The library of nosologically oriented study strategy saves time for typical studies.

### One-channel surface EMG

allows studying greater number of muscle using different loads.



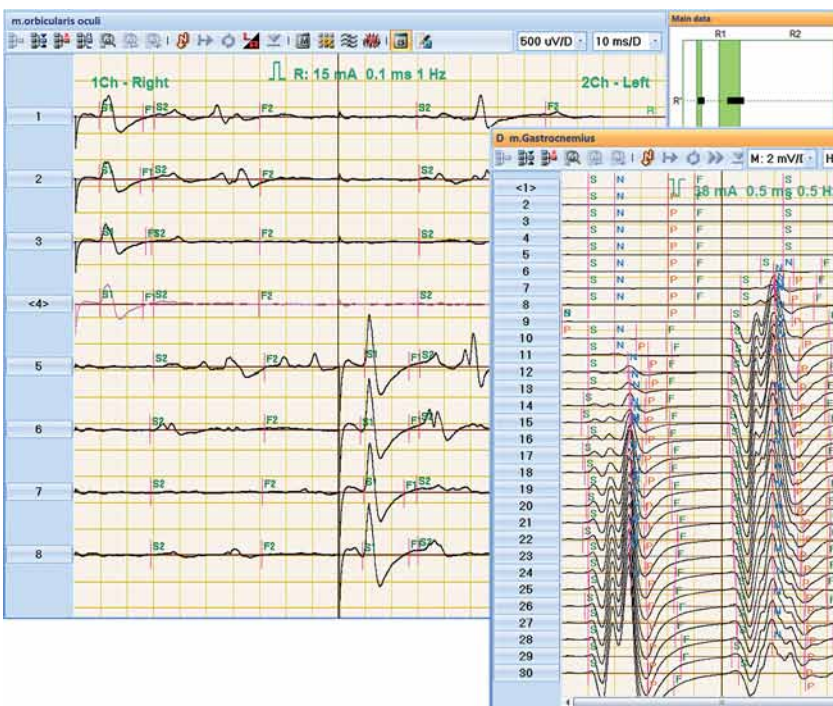
### Multichannel surface EMG

allows studying mutual work of a muscle group, calculating reciprocal, synergic and adequacy coefficients.

### Needle EMG

provides record of insertional activity, spontaneous activity, Motor Unit Potential and interference pattern.

## Basic examination programs of electromyographic studies



### H-reflex

### Blink reflex

Visual graphic form of results presentation displays the damage level.

### Rhythmic stimulation

Allows creating stimulation scenarios and perform them in manual and autonomous modes.

## Study of visual EP for chess pattern

SW chess pattern generator is attached onto the backside of additional monitor with standard mount VESA.

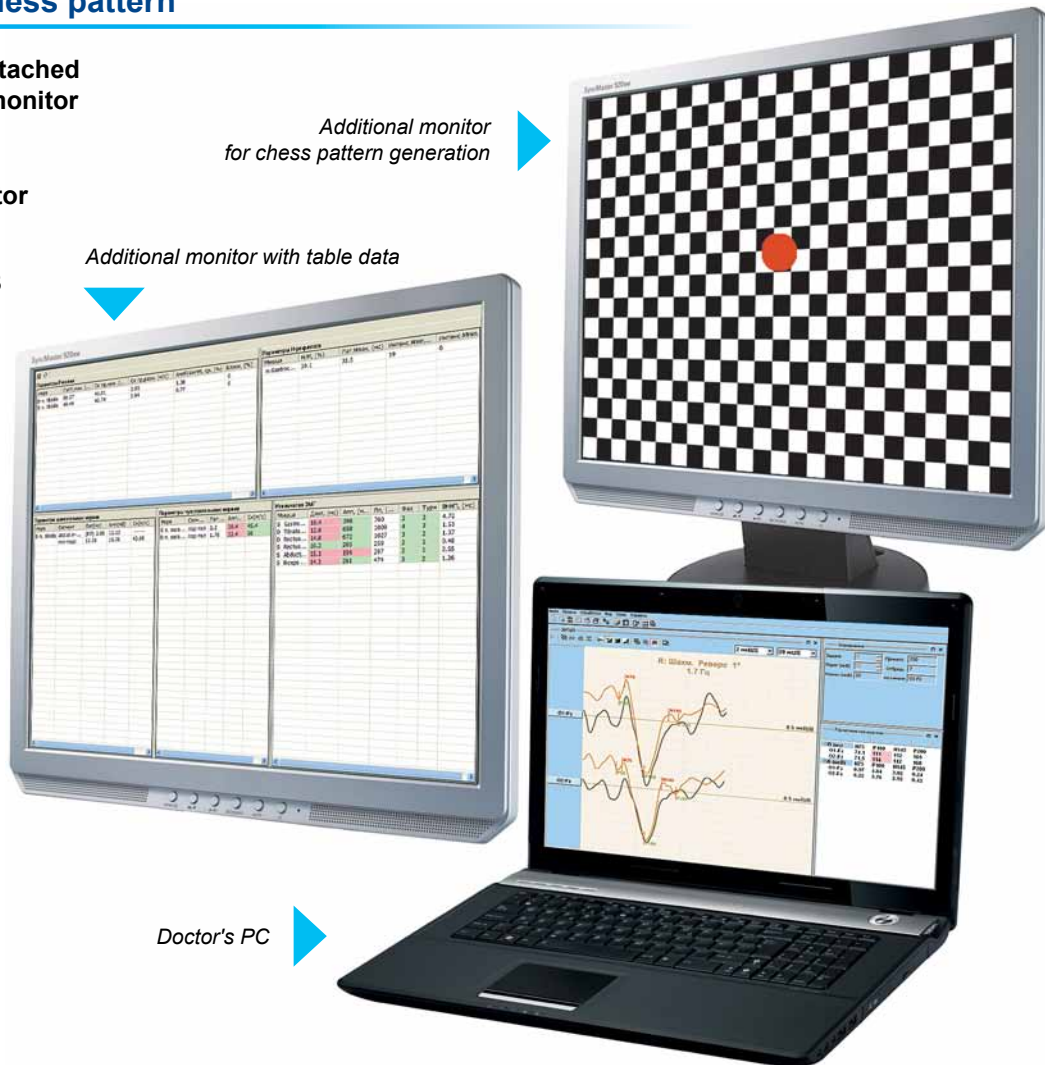
### Main characteristics of a stimulator

- Filling the monitor with chess board with cells from 2x2 to 96x128 and angle sizes from 8° to 7,5°;
- Field of pattern presentation: full screen, a half, a quarter, central part;
- Graph forms of a reverse pattern: chess board, vertical or horizontal stripes;
- Frequency of pattern element switch within the range 1-16 reverses per second;
- Movable fixation point within the screen area.

Additional monitor for chess pattern generation

Additional monitor with table data

Doctor's PC



Additional monitor can be used as a second monitor Windows for comfortable placing of signal windows, tables, etc.

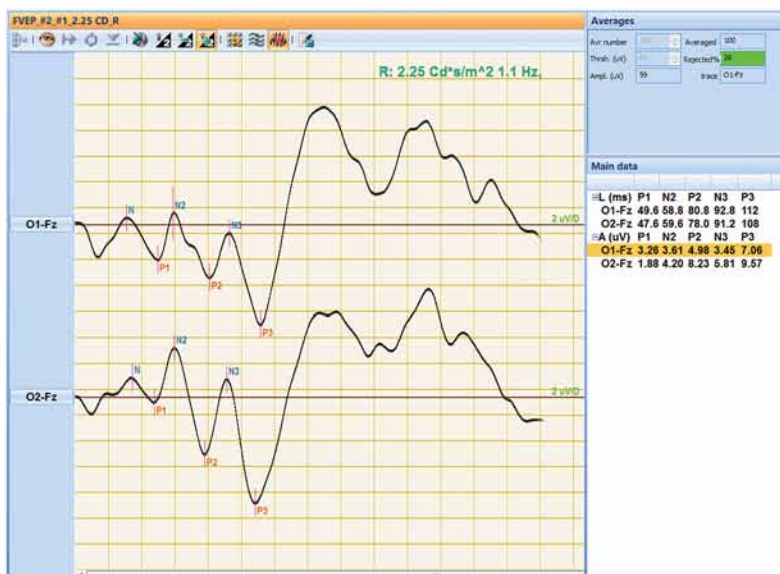
## Flash visual EP studies

Photostimulation is performed with specified LED goggles.

■ Stimulation field brightness: 2250±750 cd/m<sup>2</sup>;

■ Flashes repetitive frequency is within the range: 0,2 - 1,6 Hz;

■ Flash duration: 1,0±0,1 msec.



Corresponds to ISCEV (International Society for Clinical Electrophysiology) "Visual evoked potentials standard".

## Auditory EP studies



Comfortable semi-automatic algorithm of individual hearing threshold selection.

Medium-latency evoked potentials (MAEP)

Short-latency evoked potentials of a brainstem (SAEP)

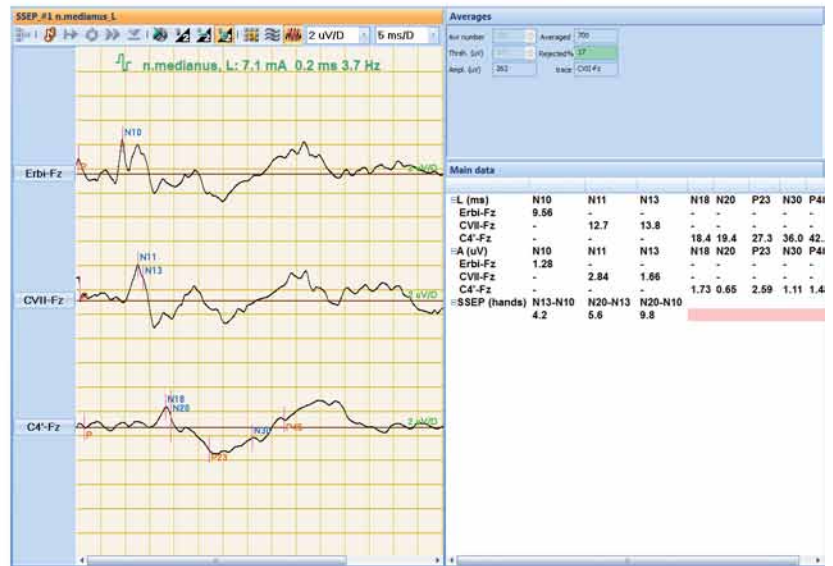
Long-latency evoked potentials (LAEP)

Specially calibrated stereo headphones are used as phonostimulator

- Stimulus type: click, harmonic tone with a square or trapezoid envelope;
- Stimulus intensity (SPL): 1 – 110 dB;
- Control: independent by right and left channels;
- Contralateral noise masking.

## Somatosensory EP studies

Short-latency somatosensory evoked potentials (SSEP)  
Long-latency somatosensory evoked potentials (LSEP)



## Transcranial magnetic stimulation (TMS)\*

\* if magnetic stimulator is available in a delivery set

- Detection of central motor velocity time in patients with demyelinating nervous system diseases;
- Calculation of radicular delay of response to magnetic stimulator during F-wave study.

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