Optional Software

Neuron-Spectrum-PSG

Neuron-Spectrum-PSG software allows performing comprehensive polysomnography studies (sleep stage analysis, analysis of sleep-disordered breathing).

Neuron-Spectrum-Video

Neuron-Spectrum-Video software allows performing the recording of long-term synchronous EEG and video from one or two video cameras controlled from the computer and audio information from one or two microphones.

There are wide possibilities to review, edit and store the recorded data.

Neuron-Spectrum-ERG

Neuron-Spectrum-ERG software for electroretinography studies performing.

BrainLoc

BrainLoc software is intended for 3-D dipole localization of pathological activity sources when suffering from epilepsy, injuries, insults, neoformations, and also localization of evoked potentials sources, wave patterns, rhythmic activity generators.

The visualization of localization results is performed on three head views, diagrammatic sectional views of the brain structures, MRT-images with the possibility of analysis results review of several records in multi-window mode.

Neuron-Spectrum-EMG

The specifications of 4 polygraphic channels of **Neuron-Spectrum-4/EPM** allow to perform the comprehensive EMG studies by the following techniques:

- Electroneuromyography (motor and sensory nerve conduction study, F-wave, H-reflex (also including paired stimulation), motor and sensory inching)
- Electromyography (spontaneous activity, interference curve, motor unit potentials)
- Neuromuscular junction (repetitive stimulation, jitter)
- Additional EMG techniques (blink reflex, sacral reflex, bulbocavernous reflex, T-reflex*, galvanic skin responses)
- Transcranial magnetic stimulation**

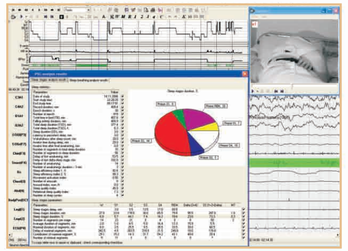
* if tendon hammer is available

** if magnetic stimulator is available

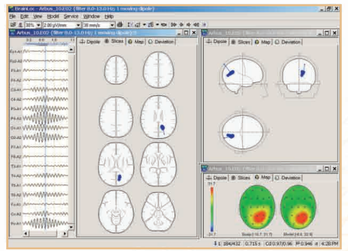
To perform EMG by all the above-mentioned techniques, the digital EEG system can be supplemented by the dedicated keyboard, the footswitch and the temperature sensor.

Poly-Spectrum-Rhythm

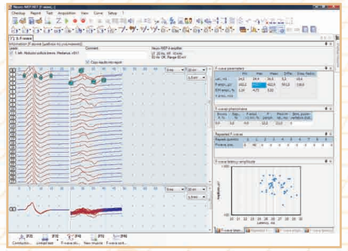
Poly-Spectrum-Rhythm software is intended for the heart rate variability (HRV) analysis with the use of data received from the ECG channel built in the digital EEG system.



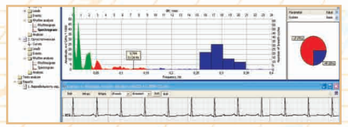
Neuron-Spectrum-PSG.



BrainLoc. Multi-window visualization of pathological activity sources.



Neuron-Spectrum-EMG. F-wave.



Poly-Spectrum-Rhythm.

Base Delivery Set

- Electronic unit
- Stand
- LED photic stimulator
- Stand for LED photic stimulator
- Set of accessories for EEG recording:
  - Bridge EEG electrode – 25 pcs.
  - Ear EEG electrode – 3 pcs.
  - Cable for bridge and ear EEG electrode – 25 pcs.
  - EEG helmet – 3 pcs. (sizes: 42-48, 48-54, 54-62)
- **Neuron-Spectrum-LEP**
- **Neuron-Spectrum-EP:**
  - Cup electrode with cable – 8 pcs.
  - Pup-jack linker – 2 pcs.
  - Set of stimulators for EP recording:
    - Visual stimulator (LED goggles)
    - Auditory stimulator for EP (headphones TA-01)
    - Stimulating bar electrode with replaceable steel and felt stimulation pads (adult)
    - Adapter for pattern-stimulator connection*
  - Patient button
  - Electrode adhesive paste (100 g)
  - Abrasive paste for skin preparation (160 g)
  - Software
  - User manual
- Software
- User manual, technical manual
- Transportation bag

According to safety standards all the computer equipment used with digital EEG system should be connected via isolation transformer.

See Also

Neuron-Spectrum-5.

Neuron-Spectrum-5

41-channel multifunctional digital EEG system for neurophysiological studies. **Neuron-Spectrum-5** provides next features: 32 EEG channels (35 digital amplifiers); possibility of recording of any of 32 monopolar derivations of "10-10" system, 4 wide-band polygraphic channels for the recording of any signals from EOG up to short-latency EP/EMG, separate ECG channel, 2 direct current (DC) channels, SpO_2 channel*, breath channel.

Neuron-Spectrum-4/P.

Neuron-Spectrum-4/P, 4, 3, 2, 1

25-, 21-, 19-, 16- and 8-channel digital EEG systems.

Digital EEG systems **Neuron-Spectrum** are modern high-tech electronic medical devices of high quality satisfying the most exacting requirements of wide circle of the customers starting from doctor in clinics and up to neurophysiologist-researcher.

* Any CRT computer monitor can be used as a pattern stimulator. The monitor is not included in the delivery set and should be bought separately.

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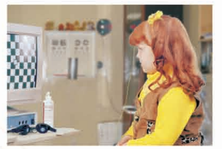
Neuron-Spectrum-4/EPM

28-Channel Multifunctional Digital EEG System
for Neurophysiological Studies



At present time all the EEG systems presented on the market can provide the possibility to register and analyze long-latency evoked potentials (EP), however, it is not easy to find the device allowing to register short-latency EP, perform electroneuromyography (EMG), nerve conduction study (NCS), electroretinography (ERG), polysomnography (PSG) and heart rate variability (HRV) studies using only one unit.

Neuron-Spectrum-4/EPM is a unique device combining 21 EEG or long-latency EP channels, 4 wide-range polygraphic channels which can be used for short-latency EP, EMG/NCS or ERG registration, ECG channel, 2 direct current channels, breath channel. In base delivery set it allows to perform EEG studies, recording and analysis of multi-channel long-latency EP, study of short-latency auditory, visual, somatosensory and cognitive EP.

Due to perfect combination of channels and their advanced specifications, on condition that the device is provided with optional equipment and software, a comprehensive neurophysiological laboratory for polysomnography, electroneuromyography, electroretinography studies, video EEG monitoring, heart rate variability study can be created.

Medical Diagnostic Equipment Development and Manufacture

Evoked Potentials Study

Everything Required for Evoked Potentials Study is in the Base Delivery Set

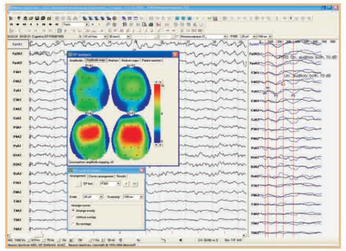
During brain bioelectrical activity studying EEG technique does not always provide a doctor with all the required information. In such cases it is necessary to apply more informative techniques, first of all it is evoked potentials study.

Set of built- in stimulators, equipment and software included in the base delivery set of **Neuron-Spectrum-4/EPM** digital EEG system provides the possibility to register and analyze both long- and short-latency evoked potentials.

Neuron-Spectrum-LEP

Software and equipment for study of multi-channel long-latency evoked potentials using EEG channels with brain mapping:

- Flash visual EP
- Pattern visual EP
- Long-latency auditory EP
- Long-latency somatosensory EP (electro stimulating electrode should be available)
- Cognitive EP (P300, MMN, CNV)

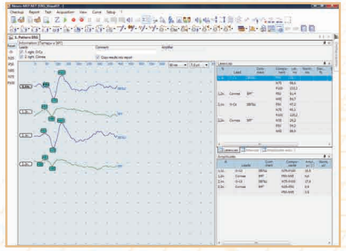


Neuron-Spectrum-LEP. Recording and analysis of multi-channel long-latency evoked potentials.

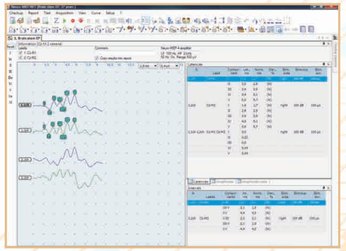
Neuron-Spectrum-EP

Software and equipment for study of short- and long-latency evoked potentials using four wide-range polygraphic channels:

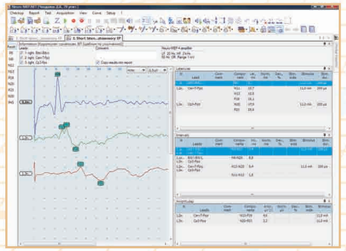
- Flash and pattern visual EP
- Short-, middle- and long-latency auditory EP
- Short- and long-latency somatosensory EP
- Cognitive EP (P300, MMN, CNV)



Neuron-Spectrum-EP. Recording and analysis of pattern visual evoked potentials.



Neuron-Spectrum-EP. Recording and analysis of short-latency auditory evoked potentials.



Neuron-Spectrum-EP. Recording and analysis of somatosensory evoked potentials.

Neuron-Spectrum Software Features

EEG Recording

Neuron-Spectrum software provides EEG recording on any digital EEG system of **Neuron-Spectrum** series by 8 – 32 channels (up to 64 digital derivations).

During the recording monopolar, bipolar or mixed montages in "10-20" and "10-10" schemes can be used. Any polygraphic channels (ECG, EMG, EOG, breath (airflow, chest and abdominal movements), breath noise (snoring), body position, limb movement, SpO_2, etc.) can be included in montage.

The montage can be switched at any moment: before the recording, during the recording, in the process of EEG review and analysis after the recording.

It is possible to set different parameters for the different channels. For example, if you can not delete the trend of EEG isoline in frontal derivations, you can specify the more high values of high pass filter only for these derivations. You can change the parameters of any channel in the process of the recording.

In split-screen mode you can observe the process of the recording in one part of the screen and review the recorded EEG in the other one.

The software allows performing the functional tests which are standard for EEG checkups (photic stimulation, auditory stimulation, hyperventilation, eyes opening). Besides, you can perform other functional tests of any duration and in any sequence.

The flexible possibilities of stimulators programming are available.

You can watch the process of EEG recording both from the computer connected to the digital EEG system or computer connected to the same local network. After EEG recording termination, EEG can be reviewed in the "as recorded" mode as if it emulates the paper record.

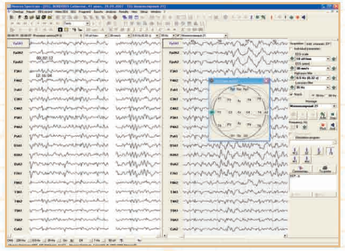
EEG Storage

The records are stored in the database which provides the advanced possibilities of structuring and search. The records archives can be stored on CD or DVD. If necessary to review the archive record, the software will inform the user of the required disk to be installed in the disk drive. Besides, the records can be stored not only on the computer connected to the digital EEG system but also on any remote computer (file server).

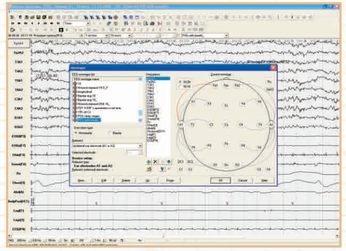
The software operates with standard network database via GDT and HL7 interfaces.

EEG Printing

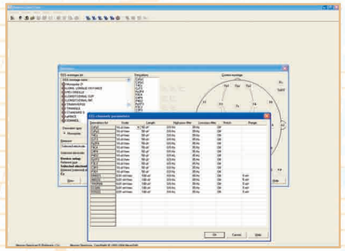
EEG with standard grid, derivations names, recording parameters can be printed on any computer printer. In the process of the recording you can mark EEG fragment which will be printed just after the recording termination.



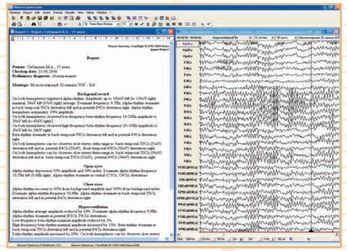
EEG recording mode.



EEG montages creation and editing.



Selection of individual parameters for any derivation.



Example of the report automatically generated by **Neuron-Spectrum** software.

EEG Analysis

The records can be analyzed with the use of the most modern techniques of mathematical analysis. Any fragment of the record or the whole record (with the division on epochs) can be processed.

As far as the digital EEG systems of **Neuron-Spectrum** series allow EEG recording not only in 35 Hz standard range but also in the wider frequency range, then not only standard ranges (alpha, beta, delta and theta) but also any ranges specified by the user can be analyzed at spectral analysis.

Brain Mapping. The software allows mapping of practically any parameter: EEG amplitude and spectrum power in the whole frequency range, EEG amplitude and spectrum power in the specified frequency ranges, rhythm index, etc.

Search of spikes and sharp waves is done automatically. In the result of search the software provides the list of the detected phenomena and mapping of these phenomena distribution on scalp.

The software provides the possibility of EEG coherent and cross-spectral analyses performing and coherence maps generating.

After EEG mathematical analysis the software allows creating the automatically generated EEG description in checkup report. Besides, the doctor can edit the report at her/his discretion, add any pictures and graphs. At that you can use structured comprehensive glossary which can be enlarged.

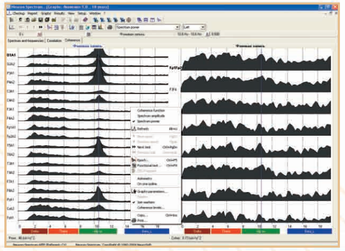
Trends Construction

Neuron-Spectrum software allows to display trends of spectrum components, EEG indexes, amplitude parameters of signals, HR, number and amplitude of epileptiphorm activity phenomena, etc. in any selected derivations.

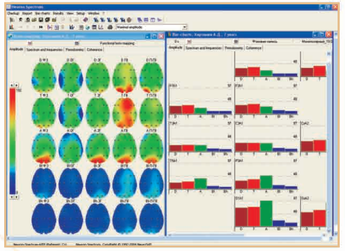
In spite of the record duration all the trend is displayed on the one screen. At that you can switch on any doubtful record fragment from the trend window by one mouse click!

Two-monitor Operation Mode

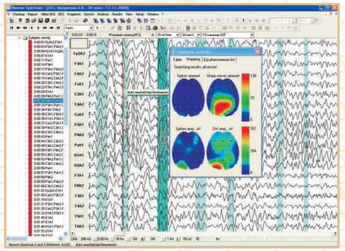
The program supports automatically two-monitor operation mode. At that the results of EEG analysis, checkup report, images from the video cameras, trends, etc. are represented on the second monitor which allows to use the first monitor for EEG displaying completely.



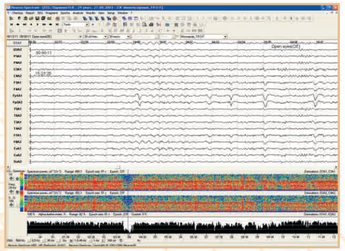
Graphs of EEG spectral and coherent analysis results.



Brain mapping and bar charts of EEG analysis results.



Automatic search of spikes and sharp waves.



EEG parameters trends.