Optional Software

Neuron-Spectrum-PSG Module

Neuron-Spectrum-PSG module allows performing comprehensive polysomnography studies (sleep stages analysis, analysis of sleep disorded breathing).

Neuron-Spectrum-Video Module

Neuron-Spectrum-Video module allows performing the long-term synchronous EEG and video recording 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-LEP Module

Neuron-Spectrum-LEP module allows recording long-latency auditory, visual (on flash and pattern), and cognitive EP by EEG channels (up to 32 ones) with brain mapping with the use both built-in and external stimulators.

Neuron-Spectrum-EP Module

Neuron-Spectrum-EP module provides the possibility to study short-, middle, and long-latency auditory, visual, somatosensory and cognitive EP by 4 wide-band polygraphic channels.

Neuron-Spectrum-ERG Module

Neuron-Spectrum-ERG module for electroretinography studies performing.

BrainLoc Software

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 Module

The specifications of 4 polygraphic channels of **Neuron-Spectrum-4/EP** 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 (repetitve 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.

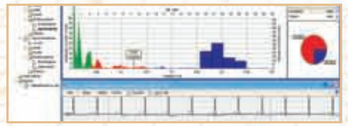
Poly-Spectrum-Rhythm Module

Poly-Spectrum-Rhythm module 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 module.

Neuron-Spectrum-EP module. Brain stem EP.

Neuron-Spectrum-EMG module. F-wave.



Poly-Spectrum-Rhythm module.

Base Delivery Set

- Electronic unit
- Stand
- LED photic stimulator
- Stand for photic stimulator
- Set of accessories for EEG recording*:
  - Bridge EEG electrode – 21 pcs.
  - Ear EEG electrode – 3 pcs.
  - Cable for bridge and ear EEG electrode – 25 pcs.
  - Helmet for EEG electrode placement – 3 pcs. (sizes: 42-28, 48-54, 54-62)
- Software
- User manual
- Technical manual
- Registration certificate
- Transportation bag

* **Neuron-Spectrum-5** delivery set includes only electrodes for 21-channel EEG recording. To register bigger number of channels it is necessary to buy additional electrode system

CE 0535

EN ISO 9001 EUROCAT

EN ISO 13485 EUROCAT

Specifications

EEG Channels

Number of channels	32
Sensitivity	1 – 1000 μV/mm
High pass filter	0.05, 0.5, 0.7, 1.5, 2, 10 Hz
Low pass filter	15, 35, 75, 100, 150, 200 Hz
Sampling rate	up to 2000 Hz
A/D converter	16
Common-mode rejection	not less than 120 dB
Suppression ratio of power frequency by notch filter	not less than 40 dB
Noise level (RMS)	not less than 0.3 μV
Input impedance	not less than 400 MΩ

Polygraphic Channels

Number of channels	4
Sampling rate per channel	up to 40000 Hz
High pass filter	0.01 – 500 Hz
Low pass filter	10 – 10000 Hz
Sensitivity	0.1 – 50000 μV/mm
Input range	0.02 – 50 μV

ECG Cannel

Number of channels	1
High pass filter	0.05, 0.5, 0.7, 1.5, 2 Hz
Low pass filter	15, 35, 75, 150 Hz

Other Channels

Breath channel	yes
SpO_2 channel**	yes
Direct current channel	yes (2 channels)
Photic stimulator	yes
Trig in/out	yes
Auditory stimulator	yes
Pattern-stimulator	yes
Electrical stimulator	yes

General Parameters and Characteristics

Interface	USB
Supply voltage:	
- electronic unit	5 V DC
- desktop PC-based system	220 – 230 V AC (50 Hz) / 110 V AC (60 Hz)
- notebook PC-based system	220 – 230 V AC (50 Hz) / 110 V AC (60 Hz) / int. battery
Electronic unit power consumption	not more than 2.8 VA
Electronic unit dimensions	150×200×60 mm
Weight:	
- electronic unit	not more than 0.9 kg
- delivery set (without computer and printer)	not more than 12.2 kg
Safety	BF type

** SpO_2 channel is not included in the base delivery set and supplied by special order

Neurosoft Ltd.
5, Voronin str., Ivanovo, 153032, Russia
P.O. Box 10, Ivanovo, 153000, Russia
Phone: +7 (4932) 24-04-34 Fax: +7 (4932) 24-04-35
E-mail: com@neurosoft.ru Internet: www.neurosoft.ru

September 2012

Neuron-Spectrum-5

41-Channel Multifunctional Digital EEG System for Neurophysiological Studies

- 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

*SpO_2 channel is not included in the base delivery set and supplied by special order

Applications:

- Routine EEG
- Long-term EEG monitoring for epilepsy
- Polysomnography
- Scientific researches

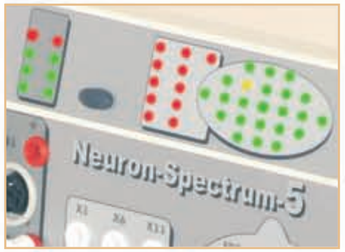
NEUROSOFT

Medical Diagnostic Equipment Development and Manufacture

What's New?

Any Electrode Can Be Used as a Referent One

Any electrode can be used as a referent one, and the bipolar derivations can be recoded without placing any other additional referent electrodes, for example, ear ones.



Button for Impedance Measurement Mode Switching on

The impedance measurement mode can be switched on by pressing the button located on the front panel of EEG electronic unit. The impedance values of all the electrodes are indicated on the front panel by colored LED indicators. When you place the electrodes on the patient it is possible to measure the impedance on the spot.

Separate ECG Channel

The separate channel with Touch proof connectors is provided for ECG recording. Now you can record ECG without engaging one of the four polygraphic channels.

DRL Derivation

This is a special engineering solution allowing to decrease the common mode rejection at least in three times in comparison with the traditional schematic of EEG amplification.

SpO_2 Channel* (Oxygen Saturation Channel)

The SpO_2 channel complements the set of channels required for the comprehensive polysomnography studies.

More Convenient Commutation of Polygraphic Channels

To connect the electrodes to the polygraphic channels, you can use either Touch proof or DIN-6 connectors.

* SpO_2 channel is not included in the base delivery set and supplied by special order

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, limbs 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 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

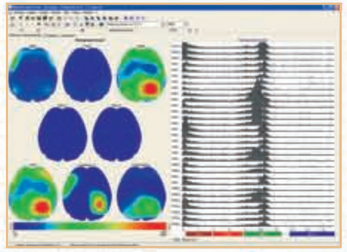
Neuron-Spectrum software allows to display trends of spectrum components, EEG indexes, amplitude parameters of signals, HR, number and amplitude of epileptiphorm activity phenomena, etc. in any selected derivations.

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!

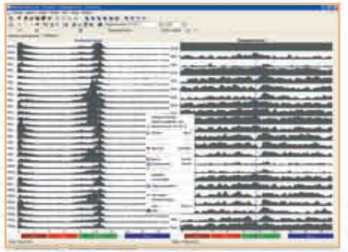
Two-monitor Operation Mode

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.

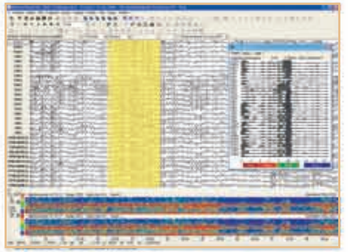
EEG recording mode.



Brain mapping and graphs of EEG spectrum power.

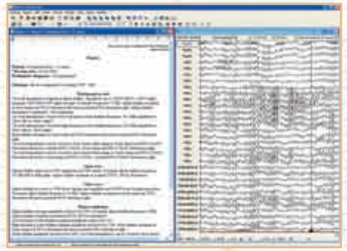


Graphs of spectral and coherent EEG analysis results.



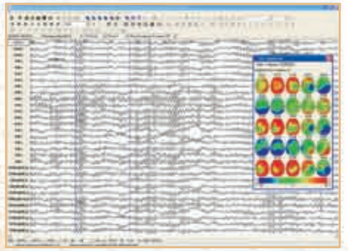
EEG parameters trends.

Selection of individual parameters for any derivation.



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

Automatic search of spikes and sharp waves.



Amplitude analysis of EEG fragment.