High-quality EEG recording and freedom of movement

MEDICOM MTD

Russia Taganrog

Electroencephalographs-recorders «ENCEPHALAN-EEGR-19/26»

www.medicom-mtd.com

ENCEPHALAN™ – wireless revolution goes on!

- EEG studies at the patient's whereabouts
- Continuous EEG videomonitoring for epileptology
- Continuous autonomous EEG monitoring at the patient-friendly environment (Holter type)
- Control of the state dynamics for neurorehabilitation
- Cerebral functions monitor
- Polysomnographic studies
- Wireless telemetric complexes for scientific research

CE 0086

ИМ02

BSI ISO 13485

UKAS QUALITY MANAGEMENT 003

EEG – studies at the patient's whereabouts

Conducted in a wireless mode **in hospital rooms, at home, in the ambulance car, under field conditions.** All equipment required for studies and PC can be kept in one shoulder bag.

The program ensures high-quality recording of 21 EEG/EP derivations and constant potentials that characterize extra-low brain activity, and also ECG, EMG, EOG and signals from respiration recursion and body position sensors.

Effective visual analysis and quantitative methods of EEG/EP **processing allow conducting rigorous and full neuro-physiologic diagnostics.**

Neuromonitoring Cerebral functions monitor

Compactness of the patient transceiver-recorders **ABP-26** and **ABP-10**, reliable back up data storage on a Memory Card and wireless transfer of information to the PC guarantee **noise immunity and effective use** of the Electroencephalograph as a neuromonitor under the conditions necessary for treatment of the patient.

Native neurophysiological data, current values and trends of monitored signals are conveniently represented on ergonomic LCD which can be distanced from the recording place (up to 6 m) **for the purpose of effective neuromonitoring and convenience of manipulation and staff care for the patient.**

Autonomous patient transceiver-recorder ABP-26

Basic device of an electro-encephalograph-recorder "Encephalan-EEGR-19/26".

Ensures the record and wireless data transfer to the PC (general number of channels 26), and continuous data storage on the removable flash-card (MicroSD).

Unit weight – not more than 400 g.

Adapter EEG-20

22 electrodes (depth, adhesive cup or cortical type) with touchproof jacks can be connected to the patient transceiver-recorder ABP-26 with the help of adapter EEG-20.

Portable phono-, photostimulator

Compact wireless stimulation control unit ensures conducting of functional tests for phono- and photostimulation at the patient's whereabouts.

The unit has autonomous battery power supply, control is performed from the doctor's PC via telemetric channel.

There is an embedded LED matrix for standard photostimulation. in the unit.

Polysomnographic studies

Wireless device for record of respiration parameters and movement activity, wireless pulseoximeter and **“Encephalan PSG” software** together with autonomous patient transceivers-recorders **ABP-26** or **ABP-10** ensure quality carrying out of the sleep study.

The result of PSG-study is a hypnogram (built in automatic mode or manually), a report on sleep statistics, sleep stages diagrams and study description with a medical comment.

Scientific research

Patient transceivers-recorders (**ABP-26, ABP-10**), wireless sensors and auxiliary units can be **combined into a wireless network (piconet). Such unique opportunity allows the scientist configuring** the necessary set of electrophysiological signals to be recorded for carrying out the scientific experiment under the conditions maximum approximated to the natural activity of a **test person or a test group**.

Wireless pulse oximeter

Ensures SpO2 sensors connection that allows obtaining necessary data for PSG studies and neuromonitoring.

Wireless sensor of movement activity

Meant for limbs movement activity registration in “restless legs syndrome” diagnostics, EEG– videomonitoring and PSG– studies.

Wireless module “Poly-4”

Records (simultaneously with EEG) up to 4 additional signals in required combinations – ECG, EMG, PPG, respiration effort, respiration flow, snore, galvanic skin response, skin conductance, temperature, etc.

Wireless module of respiration sensors

Meant for respiration parameters recording during the sleep studies or continuous monitoring. Allows connecting up to 4 sensors at a time: 2 respiratory (abdominal and thoracic), snore sensor and oral-nasal respiratory sensor.

Cardio-respiratory module

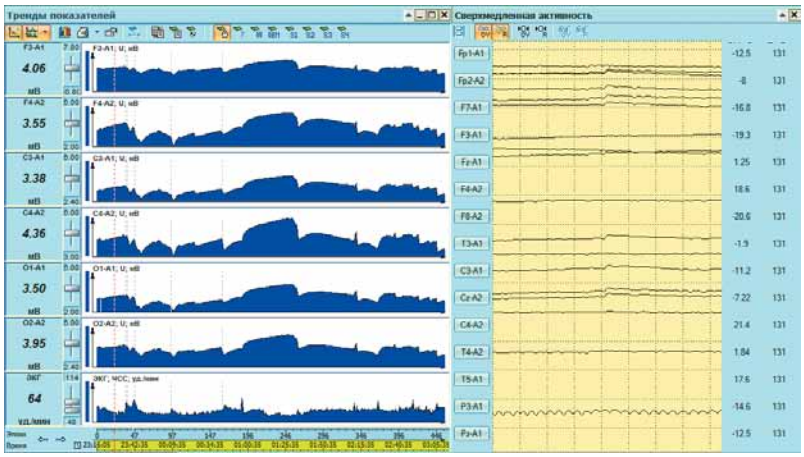
Records (simultaneously with EEG) 3 ECG derivations and rheopneumogram (impedance respiratory curve).

Additional functional capabilities

Extra-low brain activity analysis "Encephalan-ELA"

Used for determination of cerebral energy exchange intensity characteristics (metabolic alterations dynamics) in the process of study, including continuous.

Synchronized record of spontaneous EEG and extra-low brain activity (constant potential level) is performed. Signals of extra-low activity can be displayed in the form of a random circuit of referential wiring reconstruction and topographic mapping – neuroenergymapping (NEM). Some scientists consider the NEM – method an electro-physiological analogue to the Positron emission tomography according to its medical significance.



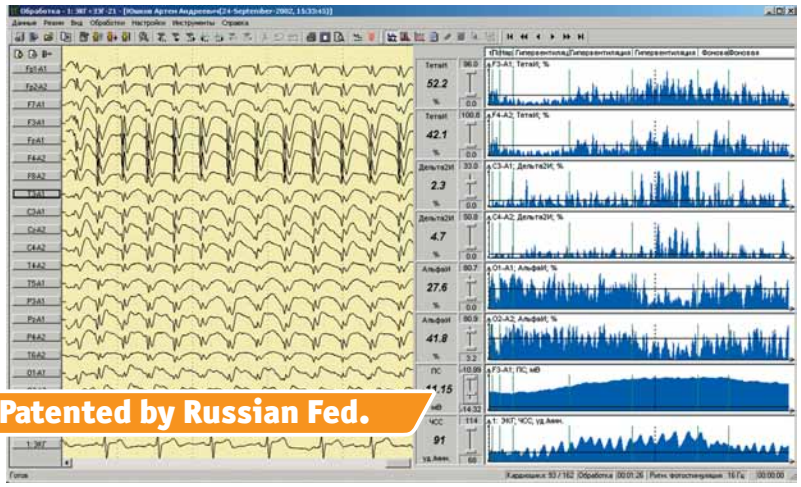
Additional functional capabilities

Combined signal analysis "Encephalan-CA"

Used for scientific research in the case **when a great number of different physiological signals** (e.g. all signals obtained from ABP-21, ABP-10, adapters connected to them, and also from wireless sensors) has to be processed.

For convenience of visual analysis of multi-type physiological signals an **original method of phased cardiocyclic presentation and stage-by-stage dynamics** is used (bound to functional tests, optional record fragments, or defined time periods with specifiedlevel of time compression).

Such compressed way of presentation in single time scale obviously shows the correlation between signals that **characterizes different systems of an organism.**



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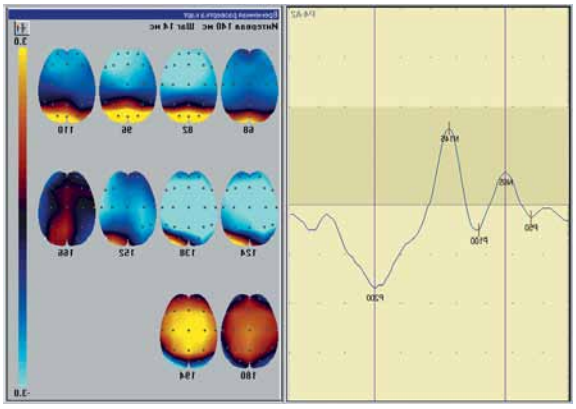


The study of evoked potentials "Encephalan-EP"

Additional functional capabilities

The results of EP studies as addition to the EEG-results help the doctor on the bases of quantitative indices to estimate functional state of a cerebrum, localization and severity of abnormalities, also help to detect abnormality of central nonspecific and nociceptive afferentation, possible cognitive disorders, etc.

EEG and EP studies using audio-visual stimulation "Encephalan-AVS"

Additional functional capabilities

To investigate perception mechanism and to detect individually important information, multimodal stimuli are presented to a test person while analyzing EEG/EP.

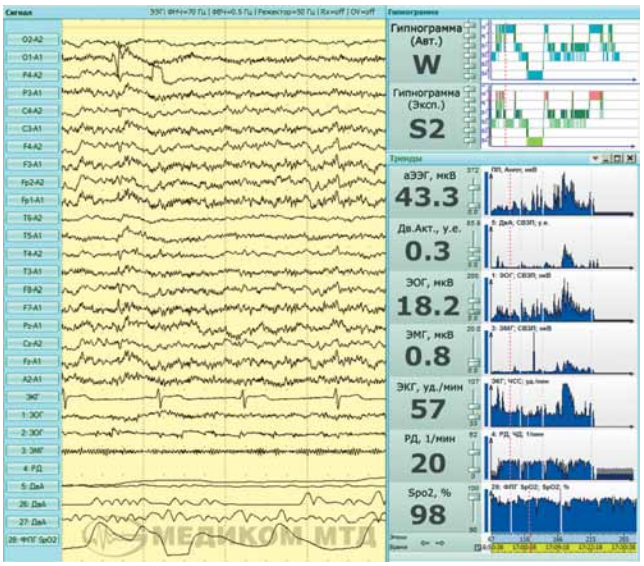
The important peculiarity is subsensory stimuli presentation mode with specified masking stimuli that help to distract attention of a person being tested onto other images concealing the true purpose of studies and the content of subsensory stimuli used.

EEG/EP recording and all stimuli and markers are **absolutely synchronized** (synchronization is ensured with the help of special sensor or net-operated).

To fix reaction (pressing a button) of a person being tested to various stimuli, the **special 5-button unit** is used .

Additional functional capabilities

Polysomnographic studies "Encephalan-PSG"

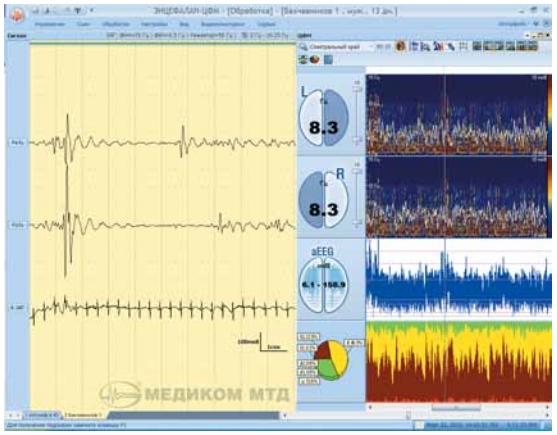


Polysomnographic studies are the main method for sleep disturbances diagnostics (insomnia, hypersomnia, parasomnia, narcolepsy), sleep-disordered breathing (sleep apnoea syndrome, alveolar hypoventilation, snore) and concomitant cardiovascular diseases (heart rate disturbance, coronary disease), and also neurological and psychosomatic disturbances (epilepsy, restless legs syndrome, bruxism, etc.)

Studies can be carried out both in autonomous (at the patient's whereabouts, with record onto the flash-card, like Holter type) and in telemetric (Bluetooth) mode.

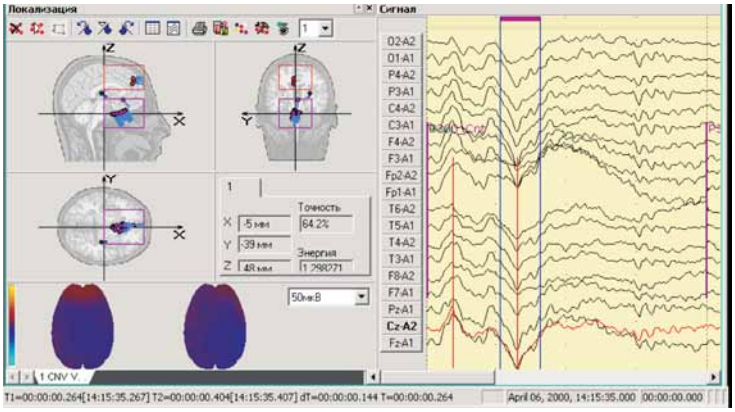
Additional functional capabilities

Neuromonitoring
Cerebral functions monitoring "Encephalan-CFM"



Ensures continuous monitoring of EEG and other vital physiological indices in neonatology, intensive therapy and neuroreanimation departments for the control of the brain functional state, for making prognosis on neurological fate of perinatal asphyxia, extravasations, hypoxic disorders, deviant brain activity detection.

The results are presented to a doctor in the form of amplitude-integrated EEG (aEEG), compressed spectrum (colour scaling) and trends of the spectroscopic indices.

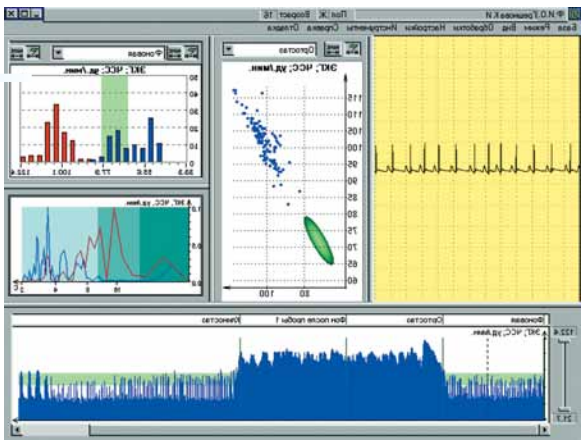


Additional functional capabilities

3D Localization of Sources "Encephalan 3D"

Designed for detecting focal manifestations of seats of pathological cerebral activity or functional seats using special EEG and EP analysis. **3D localization is used as an additional method,** especially in cases when the seat of pathological cerebral activity has no obvious morphological changes and cannot be recorded with the help of the CT and MRI.

The results of the analysis are displayed in the form of the "cloud" of distribution of equivalent dipoles on the cerebrum cutoffs, and in the form of amplitude topographic maps of initial and reconstructed EEG.



Additional functional capabilities

Heart rate variability

Designed for autonomic nervous system (ANS) state assessment on basis of heart rate variability analysis.

It can be additionally used for analysis of the dynamic of the patient's state using ECG recorded in the process of long-term EEG-studies as a result of pharmacotherapy, physical and psycho-emotional stresses, and also for controlling the treatment effectiveness. It allows detecting the dysfunctions of ANS during sleep and wakefulness.

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