



# Polysomnographs

from apnea screening at home to an elite sleep laboratory

## Polysomnography is a "gold standard" for sleep disorder diagnosis



The International Classification of Sleep Disorders (ICSD) describes different types of sleep disorders, such as obstructive or central sleep apnea syndrome, snoring, Cheyne-Stokes respiration, restless legs syndrome (RLS), bruxism, insomnia, hypersomnolence, parasomnias, and over 90 types of other sleep disorders.

### Chronic sleep disorders can cause:

- cardiac pathologies, such as arterial hypertension, arrhythmia, congestive heart failure (CHF);
- metabolic changes, hormonal regulation, and, as a result, obesity, diabetes, and other diseases;
- neurological and psychosomatic disorders, such as epilepsy, chronic cerebrovascular insufficiency, dysregulation of excitation and inhibition, depression, anxiety.

### AASM (The American Academy of Sleep Medicine) classification defines four types of polysomnographs:

**Type IV** – for continuous recording of 1-2 physiological parameters – arterial oxygen saturation SpO<sub>2</sub>, pulse rate and airflow.

**Type III** – for monitoring of 4 or more cardiorespiratory parameters, such as airflow, respiratory effort (thoracic and abdominal); heart rate or ECG, SpO<sub>2</sub>, snore, body position. **Do not record the signals required to determine sleep stages or sleep disruption.**

**Type II** – for performing full PSG outside of the laboratory. 6 or more EEG channels for the analysis of phasic sleep structure and hypnogram building.

**The presence of a technologist for types IV, III and II devices is not necessary. Data is recorded onto the polysomnograph's memory card.**

**Type I** – for performing in-laboratory, technician-attended, overnight polysomnography. EEG recording by 6, 19 or more channels to diagnose sleep-related forms of epilepsy and other neurological diseases. Can include extra channels for ECG, EMG, motor activity, and other parameters (GSR, PPG, temperature, wetness, etc.).

## Sleep signals recorder "ApnOx"

**"ApnOx-04" model**  
for respiratory screening (apnea screening)

### Signals and parameters:

- oxygen saturation (SpO<sub>2</sub>);
- respiratory rate and conventional respiratory amplitude, as well as snore and airflow velocity (using pressure airflow sensor (P-Flow));
- pulse rate and perfusion index (based on photoplethysmogram using SpO<sub>2</sub> sensor);
- body position and total movement activity (integrated movement activity sensor);
- CPAP Pressure.

### Recording modes:

- autonomous – data recording onto memory card;
- telemetric – data transmission into computer via wireless Bluetooth® channel.

**Type IV**



**Basic modules "ApnOx-04" and "ApnOx-10"**

**Over 10-hour record of physiological data onto the memory card**

**"ApnOx-10" model**  
for apnea screening and cardiorespiratory monitoring

**Type III**



**Supplemented with wireless module Poly-4**

### Signals and parameters:

- respiratory effort from thoracic and abdominal sensors;
- electrocardiogram;
- heart rate (based on ECG);
- snore (accelerometer sensor);
- airflow (thermistor airflow sensor);
- pulse wave transit time and indirect assessment of the blood pressure dynamics (based on ECG and PPG);
- motility (accelerometer sensors or surface EMG sensors);
- skin conductance;
- signals from DC-inputs.



**As a result of the study, necessary reports on sleep statistics are generated based on automatically detected events**

[www.apnox.com](http://www.apnox.com)

# Electroencephalograph-recorder "Encephalan-EEGR-19/26" Type II/I

with "Encephalan-PSG" software for somnological studies

## Modification "Mini"

Models: AT-Somno Type II, AT-Somno-Video Type I

Provides telemetric and autonomous record of physiological signals (from 13 and more channels in various combinations), including 2, 6 or 8 EEG derivations using **autonomous patient transceiver-recorder ABP-10**, wireless pulse oximeter module, other modules, electrodes, and sensors.

Provides cardiorespiratory disorders analysis, displaying brain rhythms power indices, EOG and EMG amplitude, parameters of respiration, movements, snoring and ECG in a form of trends for quick search of EEG patterns, identification of sleep stages, as well as for manual and automatic hypnogram building.



ABP-10

Automatic calculation of additional sleep statistical parameters by EEG, such as:

- sleep stages duration;
- total sleep time;
- number, index and duration of EEG arousals;
- sleep efficiency;
- sleep latencies and stages latencies;
- number and duration (WASO) of awakenings.

# Electroencephalograph-recorder "Encephalan-EEGR-19/26" Type II/I

with "Encephalan-PSG" software for somnological studies

## Main modification

Models: AT-PSG Type II, AT-PSG-Video Type I, AT-PSG-Video-Poly Type I

Provides telemetric and autonomous record of physiological signals (from 26 and more channels in various combinations), including 6, 11, 19 or 32 EEG derivations using **autonomous patient transceiver-recorder ABP-26**, wireless pulse oximeter module, other modules, electrodes, and sensors.

Provides cardiorespiratory disorders analysis, displaying brain rhythms power indices, EOG and EMG amplitude, parameters of respiration, movements, snoring and ECG in a form of trends for quick search of EEG patterns, identification of sleep stages, as well as for manual and automatic hypnogram building.



ABP-26

Additionally provides detection of epileptic patterns, classification of spike-waves in relation to sleep structure, as well as various methods of EEG quantitative analysis.

**Extended package of reports** in accordance with international standards generally accepted in somnology (AASM).

## Kits of video equipment

When working with a PC in telemetric mode with the oversight of a sleep technologist, polysomnographs can be supplemented with **a kit of video equipment** (mobile or stationary) with "Encephalan-Video" software for **synchronized night video monitoring**.

Provides visual analysis of paroxysmal activity synchronously with EEG for differential diagnosis of epilepsy and detection of symptoms of sleep disorders.



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