

Electroencephalograph-recorder computerized portable "Encephalan-EEGR-19/26"

(main modification)

Reference guide on polysomnograph's sales package selection

using illustrated catalogue for
electroencephalograph-recorder
"Encephalan-EEGR-19/26"

European Quality Certificate
CE 538571,
issued by British Standards
Institution (BSI)



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Illustrated catalogue

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standards

bsi. ISO 9001 Quality Management FM 538691
bsi. ISO 13485 Medical Devices Quality Management MD 540857

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Polysomnographs comply with Type I and Type II devices according to AASM and CMS classification – stationary or mobile polysomnographic systems with an expanded set of recorded parameters. Polysomnographs are characterized by an increased number of channels for EEG recording (6, 20, 32 derivations) to identify sleep related disorders in patients with various neurological disorders, including epilepsy. Number of channels can be increased to record ECG, EMG, movement activity and other parameters (GSR, PPG, temperature, humidity, blood pressure by an indirect way, etc.). The study may be conducted both **in stationary (attended) mode** under the supervision of a specialist with option of video monitoring synchronized with recorded parameters and **ambulatory (unattended) mode**, recording data onto the memory card as in Holter-type mode.

Application modes for electroencephalograph-recorder for PSG-studies

- **telemetric** (wireless interface technology Bluetooth®);
- **autonomous** (recording data onto the memory card – Holter-type).

Electroencephalograph-recorder for PSG-studies is available in three models:

| Model | Description |
|--|---|
| "Encephalan-EEGR-19/26" AT-PSG | Autonomous, telemetric or autonomous-telemetric PSG studies modes. |
| "Encephalan-EEGR-19/26" AT-PSG-Video | Autonomous, telemetric or autonomous-telemetric PSG studies modes with additional registration of videodata simultaneously with recording EEG and other parameters. |
| "Encephalan-EEGR-19/26" AT-PSG-Video-Poly | Autonomous, telemetric or autonomous-telemetric PSG studies modes with additional registration of videodata simultaneously with recording EEG and increased number of parameters with polygraphic channels of wireless units and modules of electroencephalograph-recorder. |

Table 1. **Polysomnographs based on electroencephalographs-recorders "Encephalan-EEGR-19/26" (main modification)**

provide multichannel registration of various physiological parameters and signals (optional, see Table 2) with wireless units and modules, electrodes and sensors to them:

| Sensors, accessories and electrode systems | Wireless registration units | | | | | | Registered signals and parameters | Abbreviations |
|---|-----------------------------|---|--------------------------------|-------------------------|----------------------------|---------------------------------|---------------------------------------|---------------|
| | ABP-26 transceiver-recorder | Patient transceiver-recorder ABP-10 in Poly-10 mode | Wireless pulse oximeter module | POLY-4 module (main) | POLY-4 module (additional) | Wireless respiration module WRM | | |
| | (optional registration) | (optional registration) | (standard registration) | (optional registration) | (standard registration) | (standard registration) | | |
| Electrode system ES-EEG-6-3 or electrode system ES-EEG-6-3(c) (6 EEG derivations and 6 polygraphic channels) | √ | - | - | - | - | - | Electroencephalogram (6 derivations) | EEG |
| | | | | | | | Chin electromyogram (3 derivations) | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |
| | | | | | | | 6 optional polygraphic channels | |
| Electrode system ES-EEG-11-3 or electrode system ES-EEG-11-3(c) (11 EEG derivations and 6 polygraphic channels) | √ | - | - | - | - | - | Electroencephalogram (12 derivations) | EEG |
| | | | | | | | Chin electromyogram | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |
| | | | | | | | 6 optional polygraphic channels | |
| Electrode system ES-EEG-19-3 or electrode system ES-EEG-19-3(c) (19 EEG derivations and 1 optional polygraphic channel) | √ | - | - | - | - | - | Electroencephalogram (20 derivations) | EEG |
| | | | | | | | Chin electromyogram | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |
| | | | | | | | 1 optional polygraphic channel | |
| Adapter cable (6 EEG derivations) | √ | - | - | - | - | - | Electroencephalogram (6 derivations) | EEG |
| | | | | | | | Chin electromyogram (3 derivations) | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |
| | | | | | | | 6 optional polygraphic channels | |
| EEG-20 connector | √ | - | - | - | - | - | Electroencephalogram (20 derivations) | EEG |
| | | | | | | | Chin electromyogram | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |
| | | | | | | | 1 optional polygraphic channel | |
| Adapter cable (32 EEG derivations) | √ | √ | - | - | - | - | Electroencephalogram (32 derivations) | EEG |
| | | | | | | | Chin electromyogram | EMGchin |
| | | | | | | | Electrooculogram (2 derivations) | EOG |
| | | | | | | | Electrocardiogram | ECG |

Table 1 (continuation). **Polysomnographs based on electroencephalographs-recorders "Encephalan-EEGR-19/26" (main modification)** provide multichannel registration of various physiological parameters and signals (optional, see Table 2) with wireless units and modules, electrodes and sensors to them:

| Sensors, accessories and electrode systems | Wireless registration units | | | | | | Registered signals and parameters | Abbreviations |
|---|-----------------------------|---|--------------------------------|-------------------------|----------------------------|---------------------------------|---|------------------|
| | ABP-26 transceiver-recorder | Patient transceiver-recorder ABP-10 in Poly-10 mode | Wireless pulse oximeter module | POLY-4 module (main) | POLY-4 module (additional) | Wireless respiration module WRM | | |
| | (optional registration) | (optional registration) | (standard registration) | (optional registration) | (standard registration) | (standard registration) | | |
| ECG electrodes for 1 ECG derivation | √ | √ | – | √ | – | – | Electrocardiogram | ECG |
| EOG electrodes for 2 EOG derivations | √ | √ | – | √ | – | – | Electrooculogram (2 derivations) | EOG |
| EMG electrodes for a chin EMG derivations | – | – | – | √ | – | – | Chin electromyogram | EMGchin |
| Pulse oximeter sensor | – | – | √ | – | – | – | Oxygen saturation | SpO2 |
| | | | | | | | Photoplethysmogram | PPG |
| | | | | | | | Pulse rate | PR |
| | | | | | | | Perfusion index | PI |
| Pressure airflow sensor (P-Fow) | – | – | √ | – | – | – | Pressure airflow | P-Flow |
| | | | | | | | Snore (via cannula of P-flow sensor) | Snore (P-Flow) |
| | | | | | | | Airflow | Airflow |
| T-adapter | – | – | √ | – | – | – | Pressure from CPAP | CPAP P |
| Accelerometer movement activity sensor (integrated) | – | – | √ | – | – | – | Movements | Mvm (actigraphy) |
| | | | | | | | Body position | BodyPos |
| Wired limbs movement sensors (2 pcs.) | * | – | – | √ | – | – | Motility | Mtl |
| Respiratory effort sensor (2 pcs.) | * | √ | – | √ | – | √ | Respiratory effort thoracic | RespEff(thor) |
| | | | | | | | Respiratory effort abdominal | RespEff(abd) |
| Thermistor airflow sensor (oronasal) | * | √ | – | – | – | √ | Temperature airflow | T-Flow |
| Snore sensor from larynx | * | √ | – | – | – | √ | Snore | Snore |
| Electromyographic sensors (2 pcs.) | * | √ | – | √ | – | – | Legs muscles EMG | EMG |
| Wet sensor (for incontinence detection) | * | √ | – | √ | – | – | Wet | Wet |
| PG-ECG connector | – | √ | – | √ | – | – | Electrocardiogram (3 thoracic derivations) | ECG |
| | | | | | | | Impedance pneumogramm | IPG |
| DC input for external devices | – | – | – | – | √ | – | DC current (4 galvanic insulated channels) | DC |
| N-electrode | – | √ | – | √ | – | – | Additional electrode for EMG registration | N |

* marks for the physiological parameters sensors, which can be connected to polygraphic channels of electrode systems, adapter cable or EEG-20 connector.

Table 2. Typical sales packages of polysomnographs based on electroencephalographs-recorders “Encephalan-EEGR-19/26”(main modification) AT-PSG, AT-PSG-Video, AT-PSG-Video-Poly models with the software “Encephalan-PSG”(“maximal” suite)

| Name and description of a suit | Composition |
|--|--|
| <p>“Minimal” suite (start up set):</p> <p>to analyze sleep structure and EEG by 6 EEG derivations and cardiorespiratory monitoring.</p> <p><i>Corresponds to Type II according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26:</p> <ul style="list-style-type: none"> • Electrode system ES-EEG-6-3(c) to record 6 EEG derivations (with adhesive cup EEG electrodes), 3 chin EMG, 2 EOG and 1 ECG. • 6 universal polygraphic channels of electrode system: 4 channels for sensors: RespEf (chest), RespEf (abdomen), T-Flow, snore and 2 channels for optional sensors: EMG (legs muscles), temperature, EDA and wet. <p>Wireless pulse oximeter module (standard configuration):</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. |
| <p>"Basic" suite:</p> <p>to analyze sleep structure and expanded EEG analysis by 12 EEG derivations and cardiorespiratory monitoring.</p> <p><i>Corresponds to Type I according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26:</p> <ul style="list-style-type: none"> • Electrode system ES-EEG-11-3 with fixing EEG electrodes in the eyelets of elastic protective cloth cap or Electrode system ES-EEG-11-3(c) with adhesive cup EEG electrodes or adapter cable with a set of adhesive cup EEG electrodes to record 12 EEG, 1 chin EMG and 2 EOG. • 6 universal polygraphic channels: 5 channels for standard sensors: ECG, RespEf (chest), RespEf (abdomen), T-Flow, snore and 1 channel for optional sensor: wet, GSR (EDA), temperature, etc. <p>Wireless pulse oximeter module (standard configuration).</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. |
| <p>“Optimal” suite:</p> <p>to analyze sleep structure and expanded EEG analysis by 20 EEG derivations and cardiorespiratory monitoring.</p> <p><i>Corresponds to Type I according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26:</p> <ul style="list-style-type: none"> • Electrode system ES-EEG-19-3 with fixing EEG electrodes in the eyelets of elastic protective cloth cap or connector "EEG-20" for portable (mobile) application of patient transceiver-recorder ABP-26 with a set of adhesive cup EEG electrodes to record 20 EEG derivations, 1 chin EMG and 2 EOG and 1 optional channel, for example ECG. <p>Wireless pulse oximeter module (standard configuration).</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. <p>Wireless respiratory module:</p> <ul style="list-style-type: none"> • RespEf (chest), RespEf (abdomen), T-Flow, snore. |
| <p>“Optimal +” suite:</p> <p>to analyze sleep structure and expanded EEG analysis by 20 EEG derivations, cardiorespiratory monitoring and intensity of restless legs syndrome</p> <p><i>Corresponds to Type I according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26:</p> <ul style="list-style-type: none"> • Electrode system ES-EEG-19-3 with fixing EEG electrodes in the eyelets of elastic protective cloth cap or connector "EEG-20" for portable (mobile) application of patient transceiver-recorder ABP-26 with a set of adhesive cup EEG electrodes to record 20 EEG derivations, 1 chin EMG and 2 EOG and 1 optional channel, for example ECG. <p>Wireless pulse oximeter module (standard configuration).</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. <p>Wireless respiratory module:</p> <ul style="list-style-type: none"> • RespEf (chest), RespEf (abdomen), T-Flow, snore. <p>Universal wireless POLY – 4:</p> <ul style="list-style-type: none"> • 2 EMG sensors, 2 mtl sensors |

Table 2 (continuation). **Typical sales packages of polysomnographs based on electroencephalographs-recorders "Encephalan-EEGR-19/26"(main modification) AT-PSG, AT-PSG-Video, AT-PSG-Video-Poly models with the software "Encephalan-PSG"("maximal" suite)**

| Name and description of a suit | Composition |
|---|---|
| <p>"Professional" suite:</p> <p>to analyze sleep structure and expanded EEG analysis by 20 EEG derivations and cardiorespiratory monitoring, evaluation of restless legs syndrome intensity and increased number of polygraphic channels</p> <p><i>Corresponds to Type I according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26:</p> <ul style="list-style-type: none"> • Electrode system ES-EEG-19-3 with fixing EEG electrodes in the eyelets of elastic protective cloth cap or connector "EEG-20" for portable (mobile) application of patient transceiver-recorder ABP-26 with a set of adhesive cup EEG electrodes to record 20 EEG derivations, 1 chin EMG and 2 EOG and 1 optional channel, for example ECG. <p>Wireless pulse oximeter module (standard configuration):</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. <p>Additional patient transceiver-recorder ABP-10 in Poly-10 mode:</p> <ul style="list-style-type: none"> • RespEf (chest), RespEf (abdomen), 2 EMG, 2 Mtl, PG-ECG connector – ECG (3 derivations), 1 IPG derivation |
| <p>"Professional 32-EEG" suite:</p> <p>to analyze sleep structure and expanded EEG analysis by 32 EEG derivations and cardiorespiratory monitoring.</p> <p><i>Corresponds to Type I according to AASM and CMS classification:</i></p> | <p>26-channel patient transceiver-recorder ABP-26 with additional patient transceiver-recorder ABP-10 in Poly-10 mode:</p> <ul style="list-style-type: none"> • adapter cable with a set of adhesive cup EEG electrodes to record 32 EEG derivations. <p>Wireless pulse oximeter module (standard configuration):</p> <ul style="list-style-type: none"> • SpO2, PPG, PR, PI, P-flow, snore (P-flow), Mvm (actigraphy), BodyPos. <p>Wireless respiratory module WRM:</p> <ul style="list-style-type: none"> • RespEf (chest), RespEf (abdomen), T-Flow, snore <p>Universal wireless module Poly-4:</p> <ul style="list-style-type: none"> • chin EMG, 2 EOG, 1 ECG. |

- 1. Models AT-PSG-Video and AT-PSG-Video-Poly** shall include a video equipment kit (for EEG / PSG video monitoring) with software for video monitoring "Encephalan-Video".
- The **optional Poly-4 module can input signals of DC current (DC)** for 4 galvanically isolated inputs in the mode of potential registration with and open input Requires approval of data input protocol (DC). **Warning:** work with no more than 2 POLY-4 modules at a time.
NOTE: In sales package for polysomnographs, simultaneous operation of not more than two Poly-4 modules is possible.
- For extended analysis of EEG, polysomnographs can be supplemented with phono- photostimulator, additional accessories and software for quantitative methods of EEG processing.
- During polysomnography, the registration of the therapy pressure in the mask of a CPAP/BiPAP/AutoPAP device is possible to monitor the impact of CPAP/BiPAP/AutoPAP therapy on the quality of sleep. This option requires purchasing the T-adapter with a tube.
- Electroencephalographs-recorders "Encephalan-EEGR-19/26," main modification** can be additionally supplied with sensors, accessories and software to use for other medical purpose during the day (for example, sensors and software required for functional biocontrol with BFB "REHACOR" for relaxation skills training and self-regulation in order to improve the quality of sleep) to improve the economic efficiency of its use (**quotation on request**).