# Rehabilitation Psychophysiological System "Rehacor"

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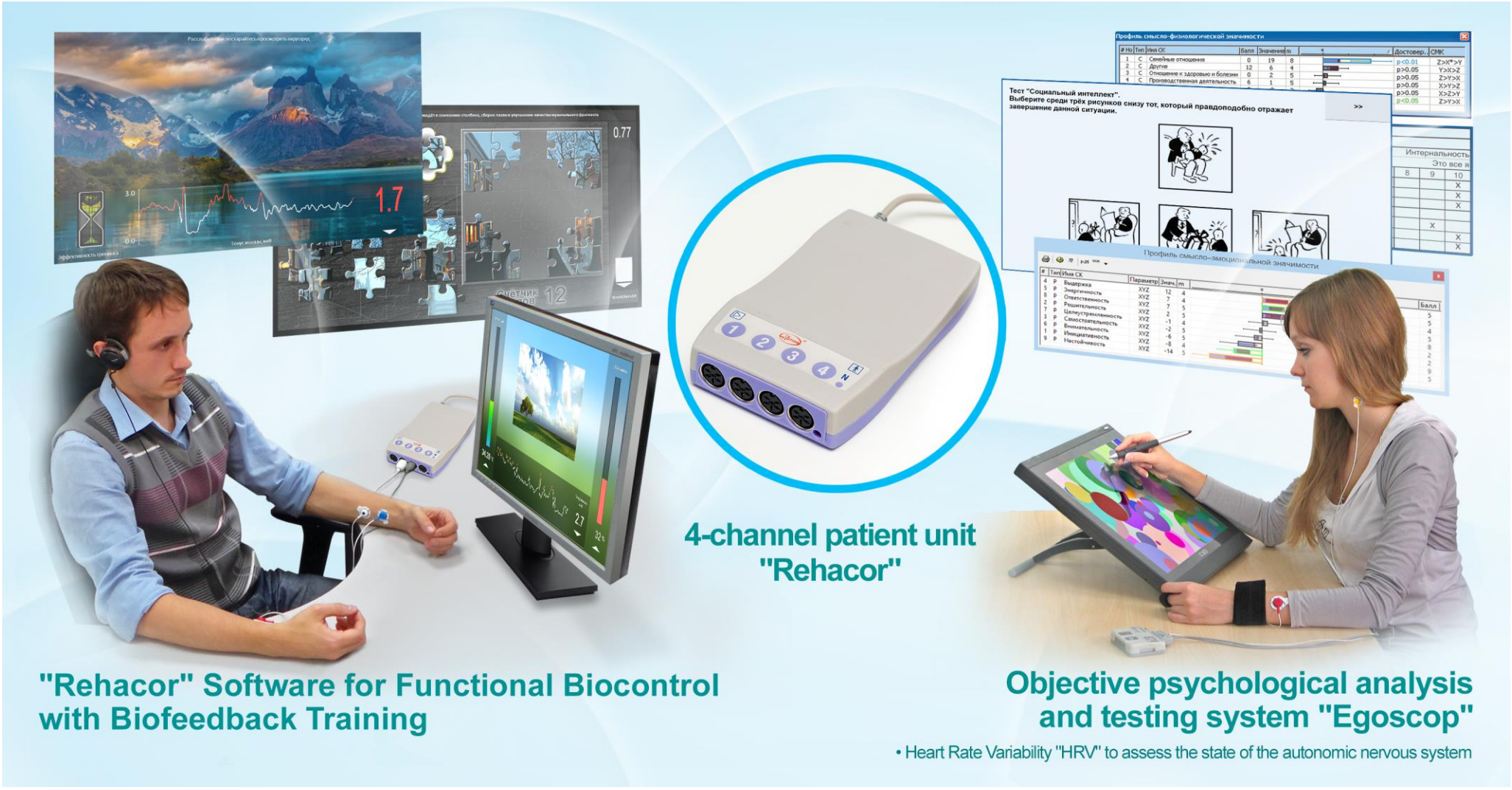


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# Rehabilitation Psychophysiological System "Rehacor"

System "Rehacor" uses the method of biofeedback (BFB training) and neurophysiological training (neurofeedback, neurofintness) and provides:

* implementation of methods for training self-regulation skills in order to develop and improve the necessary psychophysiological qualities in athletes, people of stressful professions, management personnel and students;

* carrying out health and rehabilitation procedures and increasing the patient's resistance to stressful factors, non-drug recovery of impaired functions, improving nervous regulation in various diseases, phobias, pathological conditions and addictions (both in children and adults).

Library procedures of biofeedback training uses broad multimedia capabilities of modern computers and allows applying most of the known types of functional biocontrol with biofeedback, allows a user to modify and adapt the necessary library procedures (or create new ones) considering esthetic, intellectual, age and other preferences or concerns of patients.

**Patient unit "Rehacor"** provides synchronous registration of various physiological signals and indicators via 4 channels:

- electroencephalogram (EEG);
- respiratory effort;
- electrocardiogram (ECG);
- electromyogram (EMG);
- envelope EMG (EEMG);
- photoplethysmogram (PPG);
- skin potential (SP);
- galvanic skin response (GSR);
- temperature (T);
- rheoencephalogram (RHEO).

The patient unit also provides connection of an electrostimulator.

The Reactor system can be supplemented with software for assessing the state of the autonomic nervous system based on the analysis of heart rate variability - software "HRV".

## Contents of the illustrated* catalogue



**** The external appearance of the products is given as an example and may have some differences that do not affect functionality when delivered.***

| Item # | Ref. no. | Description and figure | | Comments |
|---|---|---|---|---|
| **1.** | **Rehabilitation Psychophysiological System "Rehacor" version BFB**<br>To form a sales package, you should select sensors, electrodes, additional devices, options for "Rehacor" software, additional procedures and software in addition to the basic set of the patient unit and a set of electrodes sensors and accessories | | | |
| **1.1.** | **A_4284** | **Basic set of the patient unit**<br>Includes<br>• **patient unit** – 4 universal polygraphic channels, electrostimulator control channel, built – in PC-USB communication interface, power supply - from the computer's USB port;<br>• **electronic card file for data storage – "CardFile";**<br>• operational documentation. |  | **Requires:**<br>SW Functional biocontrol with biofeedback "Rehacor";<br>kit of sensors, electrodes and accessories<br>computer facilities.<br>Can be supplemented with: "HRV" software. |

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| **1.2.** | **A_2641** | **Set of electrodes, sensors and accessories for BFB – for Software “Rehacor”** | |
| 1.2.1. | **A_5806** | **A kit of electrodes, sensors and accessories**<br>**Includes:**<br>• Temperature sensor (A_1552) – 2 pcs.;<br>• Envelope EMG sensor EEMG-2A (A_6605) – 2 pcs.;<br>• PPG sensor (cuff included) (A_1674);<br>• Respiration recursion sensor -1M (A_1553) – 2 pcs.;<br>• GSR sensor (A_1703);<br>• bipolar cable for disposable EMG/SC electrodes (A_5875);<br>• bipolar cable for cup adhesive EEG electrodes (A_2373) – 2 pcs.;<br>• cable “CG-2.1 (A_1709);<br>• cable for disposal snap N-electrode (A_4822);<br>• brush for electrode cleaning (A_0343);<br>• disposable ECG electrodes (A_2714) –50 pcs.;<br>• adhesive plaster Omnifix (A_1302);<br>• adhesive paste «УНИПАСТА» (A_2129).<br>  <br> | Optional supply of sensors at customer's option from this catalogue. |

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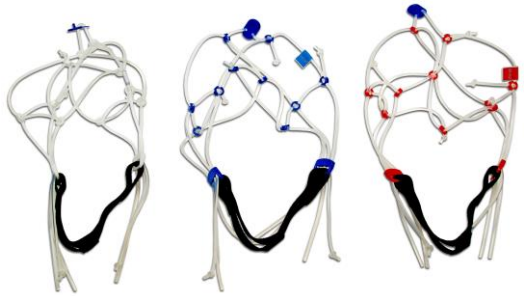
| 1.2.2. | **A_2229** | Set of ECG electrodes<br><br>Set contains 3 clamps. |  | **At customer's option**<br><br>Can be used with an ECG-2.1 cable from a set of sensors, electrodes and accessories. |
| 1.2.3. | **A_6595-5** | **Electrode cable EEG-4**<br><br>4 monopolar EEG derivations with cup electrodes for rubber straps |  | **At customer's option**<br><br>For biofeedback procedures (neurofeedback) with EEG<br><br>**Requires:**<br><br>• electrode gel;<br><br>• Caps Set of rubber straps |
| 1.2.4. | **A_2804-2** | **Caps Set of rubber straps for EEG/REG electrodes**<br><br>Silicone tube caps to attach a small amount of EEG electrodes for contact gel and REG derivations for biofeedback procedures.<br><br>**The set includes** caps of 3 sizes from 48 to 62. |  | **From "Encephalan-ES" set**<br><br>For Electrode cable EEG-4 or electrodes with a cable for 2 EEG bipolar derivations. |

| 1.3. | Software "Rehacor" for functional biocontrol with biofeedback | | | |
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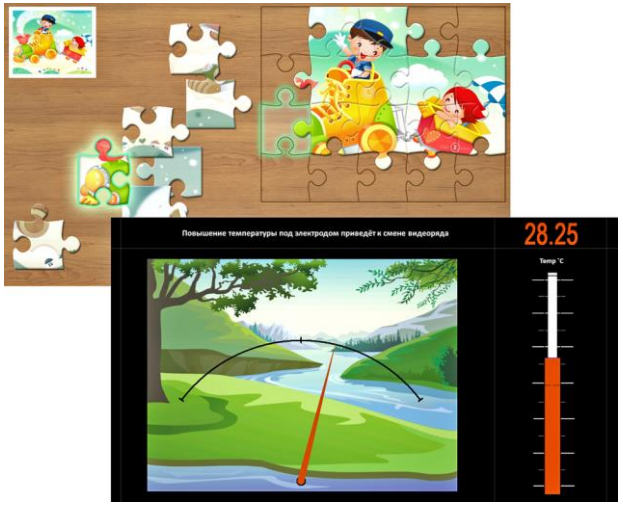
| 1.3.1. | **A_1010-01** | **"Rehacor" Software for Functional Biocontrol with Biofeedback Training, "Basic" Suite**<br><br>Software provides procedures of functional biocontrol with biofeedback (BFB training) with the control of various physiological parameters from procedures library and with option of creation of new procedures for non-medicated restoration of damaged functions, improvement of nerve regulations in different diseases, phobias, pathological addictions, improvement of stress resistance; control and correction of psychophysiological state in different situations and sicknesses; forming the optimal state for performance for sportsmen, persons with stressful and responsible jobs; overcome the attention deficit hyperactivity disorder (ADHD) in children and adolescents. |  | **Requires:**<br><br>Kit of electrodes, sensors and accessories |
| 1.3.2. | **A_1010-02** | **"Rehacor" Software for Functional Biocontrol with Biofeedback Training,** "Professional" Suite<br><br>Extended suite of procedures library. In addition to "Basic" suite it contains**:**<br><br>• procedures on neurofeedback for functional brain asymmetry, optimization of brain rhythms and zonal differences of alpha-rhythm; very low frequency brain activity;<br><br>• combined training for brain electric activity and cerebral blood flow (REG);<br><br>• multiparametric training for correction of psycho emotional state and psychological stress. |  | **Requires:**<br><br>• kit of electrodes, sensors and accessories;<br><br>• electrode systems and accessories to them (from the set of EEG electrodes "Encephalan-ES" ES-EEG-4R-3A(c) for BFB procedures of neurobiocontrol;<br><br>• rheoadapters with a set of electrodes for the biofeedback training by blood circulation parameters (CHD and REG). |

| 1.4. | | Additional sensors, accessories and software | |
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| 1.4.1. | **A_0813** | **ICG adapter with electrode set** for blood circulation biofeedback training (REG, CHD, BP)<br>**The set includes:**<br>• rheographic cable "Y-type" (A_6294, length – 1.5 m) – 2 pcs.;<br>• set of electrode cables (A_7589, length – 1.5 m) – 2 pcs.;<br>• REG Electrode with a snap connector (A_2665) – 2 pcs.;<br>• ribbon electrode (A_7282, length – 0.4 m) – 4 pcs.;<br>• REG electrodes fixing ribbon (A_8567).<br>  | **BFB procedures with REG require**:<br>Electrode gel; |
| 1.4.2. | **A_1599-9** | **Electrostimulator ES-03** for procedures of stress resistance increasing in SW “Rehacor”<br>**The set includes:**<br>• stimulating bar electrode;<br>• set for electrodes attachment.<br>  | |

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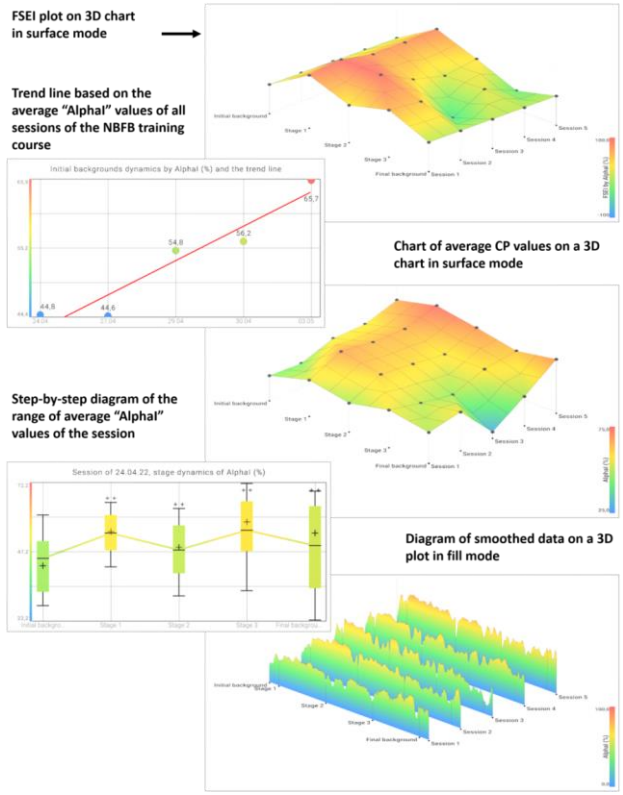
| 1.4.3. | **A_6354-1** | **Pad for tapping test and procedures of biofeedback training "Rhythmo-BFB" additionally to procedure library of "Basic" or "Professional" Suite**<br><br>**The set includes:**<br>• pad for tapping test with a stylus;<br>• procedures of biofeedback training "Rhythmo-BFB".<br><br>Evaluation and training of the ability to perceive and reproduce sound patterns of varying complexity. Developing a sense of rhythm and time. Increasing the success of cognitive activity and rehabilitation of various brain dysfunctions.<br><br>**For children:** improvement of attention, motor control and coordination, speech development, improvement of auditory perception, reducing behavior problems (impulsivity, aggressiveness, hyperactivity, emotional contact difficulties).<br><br>**For adults:** cognitive and motor rehabilitation after traumatic brain injuries, stroke, Parkinson's disease, spinal cord injuries, etc. |  | Additional to procedure library of "Basic" or "Professional" Suite of "Rehacor" Software for Functional Biocontrol with Biofeedback Training |
| 1.4.4. | **A_2577-45** | **Efficacy evaluation of BFB trainings part of Software for functional biocontrol with biofeedback training "REHACOR"**<br><br>The software provides an assessment of the effectiveness and success of the BFB training in the processing mode in post-real time, in particular:<br>• quantifying the success of each managed stage of the session;<br>• quantitative assessment of the success of the BFB training session;<br>• quantitative assessment of the effectiveness of the full course of the conducted BFB trainings.<br><br>Monitoring the success of the BFB training is necessary for the instructor to confirm that the goals of the BFB training session are achieved as it progresses or at least tend to achieve the goal. Success control is also needed to be able to timely identify the absence of expected positive results or the appearance of some negative trends in the dynamics of physiological indicators in order to be able to adjust the course of the BFB training.<br><br>The effectiveness of the BFB training course as a whole is assessed on the basis of the average success index of all sessions included in this course and the "cumulative effect". The cumulative effect is estimated on the basis of identifying the tendency of accumulating physiological shifts of controlled parameters from session to session and characterizes the severity of long-term modification of the mechanisms of physiological regulation.<br><br>The software "Efficacy evaluation of BFB trainings" provides the formation of a verbal report on the course of the BFB training, with the inclusion of two or three-dimensional forms of representations of the results, for example, in the form of graphs for the session, graphs for the course, surface 3D diagrams of the course performance and conclusions on controlled parameters. |  | |

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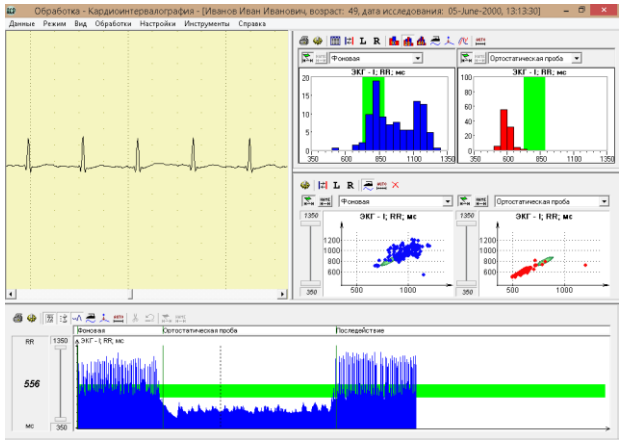
| **2.** | | **Additional software – Hear rate variability «HRV»** | | |
| **2.1.** | **A_1964** | **"HRV" Software for Heart Rate Variability Analysis**<br><br>Background registration of ECG considering the autonomic nervous system reactivity to provoking actions. Software is used to evaluate the adequacy of physical and psycho-emotional stress taking into account the autonomic reactivity to a provoking effect, as well as to control the effect of medicinal drugs and efficiency of treatment prescribed.<br><br>Software uses standard recommended types of quantitative analysis and results representation in the form of cardiointervalogram trends (HR, RR), statistical and spectral parameters, hystograms and scattergrams (correlation rhythmograms) of RR-intervals allocation, spectrograms with frequency ranges that characterize the state of ANS and balance of sympathetic and parasympathetic sections (HF, LF, VLF).<br><br>There is an option of forming the formalized protocol with description of initial state and autonomic reactivity. |  | To assess the state of the autonomic nervous system and neurohumoral regulation of the patient based on the study of heart rate variability.<br><br>Requires ECG cable from the kit (A_5806) |

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| **3.** | | **Additional electrodes, sensors, with "DIN (6-contact 270°)" connector for polygraphic channels of a patient unit** | | |
| **3.1.** | **A_1553** | **Respiratory Effort Sensor**<br><br>For evaluation of parameters of abdominal and thoracic respiration (breathing rate and amplitude, duration of in- and exhalation phases) and detection of breathing disorders basing on respiration belt stretching measurement. |  | |
| **3.2.** | **A_1552** | **Temperature sensor**<br><br>To evaluate temperature of skin surface of selected body part.<br><br>Cable length – 1,5 m. |  | |

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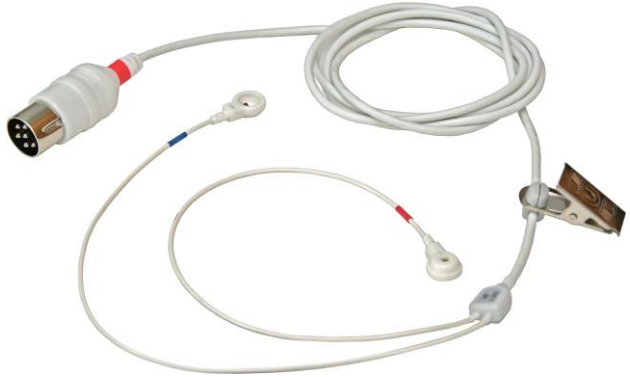
| **3.3.** | **A_6605** | **Envelope EMG sensor (double)**<br><br>To evaluate the tension (tone) of the selected muscle based on the measurement of the envelope EMG.<br><br>Cable length – 1.2 m. |  | |
| **3.4.** | **A_1703** | **GSR sensor**<br><br>For evaluation of vegetative manifestations and emotional stress basing on the measurement of GSR phase component.<br><br>Cable length – 1.2 m. |  | |
| **3.5.** | **A_2373** | **Bipolar cable with cup adhesive EEG electrodes**<br><br>To register the EEG during biofeedback/neurofeedback training<br><br>Cable length – 1.2 m. |  | |
| **3.6.** | **A_1674** | **Photoplethysmogram (PPG) Sensor**<br><br>For evaluation of parameters of peripheral blood circulation which characterize pulse blood filling and tone of variable diameter vessels.<br><br>Cable length – 1.2 m.<br><br>**The set includes:** finger cuff; |  | |

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| **3.7.** | **A_5875** | **Bipolar cable for disposable EOG/EMG/Skin Conductance electrodes**<br>For disposable electrodes.<br>Cable length – 1.5 m (1,2 + 0,25) |  | |
| **3.8.** | **A_1709** | **ECG Cable**<br>for disposable snap electrodes (2 electrodes).<br>Cable length – 1,5 m (0,75 + 0,75) | | Longer conductors provide a more convenient attachment when registering ECG |
| **3.9.** | **A_2714** | Disposable ECG electrode (for EOG, EMG)<br>50 pcs in a pack. |  | |
| **3.10.** | **A_2329** | **SW-key (USB)** |  | Allows working with software at any additional PC including network variant. |
| **3.11.** | **A_1854** | Electrode gel for EEG – 250 ml. |  | |

| 4. | **Required computing hardware and office equipment** (can be purchased by a customer individually) | | | At customer's option |
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| **4.1.** | **Personal computer**<br>Software of "Rehacor" system is installed on the computer in accordance with selected sales package. | | | **Configuration and characteristics are nominal and should be specified when order.**<br>**Minimal requirements for portable PC (laptop):**<br>• Intel Core i5;<br>• RAM 4 GB;<br>• HDD 1 TB;<br>• SSD 128 GB<br>• LCD monitor 14" and bigger;<br>• OS Windows 10.<br>**The minimum possible characteristics of a stationary personal computer are similar to a portable one, except for LCD monitor -- diagonal of 23".**<br>If the customer requires and is able to purchase the improved characteristics, inform the manufacturer about it: advanced characteristics should be approved by the manufacturer. |
| 4.1.1. | **A_2380** | **Personal computer** (portable).<br>**One** additional monitor can be connected. |  | |
| 4.1.2. | **A_2380-1** | **Personal computer** (portable).<br>**Two** additional monitors can be connected. | | |
| 4.1.3. | **A_4305** | **Personal computer** (stationary).<br>**One or two** additional monitors can be connected. |  | |
| **4.2.** | **Additional accessories and software for the personal computer** | | | |
| 4.2.1. | **A_6843** | Mobile HDD 1000 GB | | |
| 4.2.2. | **A_4300** | Computer Acoustic System 2.1 | | |
| 4.2.3. | **A_5109** | Antivirus application "Kaspersky Internet Security" or similar. Recommended to protect PC from viruses | | |
| 4.2.4. | **A_4319** | MS Office. Required package – Word и Excel | | |
| 4.2.5. | **A_4299** | Uninterruptible power supply | | |

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| 4.2.6. | **A_0687** | **Additional LCD monitor** (minimal diagonal 23”)<br>resolution 1920x1080,<br>aspect ratio16x9. |  | |
| 4.2.7. | **A_5565** | Additional monitor – a TV-set with a large diagonal<br>resolution 1920x1080,<br>aspect ratio16x9. |  | |
| **4.3.** | **A_4087** | Printer<br>Laser Black-And-White A4 format |  | |