COMPLEX ELECTRONIC SYSTEM FOR MONITORING AND DIAGNOSTICS IN MEDICINE

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The mortality caused by cardiovascular diseases gains the lead among human maladies. Nowadays, the cerebral vascular diseases constitute one of the main concerns and are determined, on the one hand by high morbidity and mortality that central vascular disorders causes it, and on the other hand, by difficulties of diagnosis, treatment and rehabilitation.

The existing monitoring systems, largely, are dedicated to monitoring the operation of central cardiovascular system.

The complex system of investigation and monitoring is based on a modern non-invasive technology that provides accurate information for the identification and monitoring of severe problems and a series of vital information to achieve an accurate diagnosis. The diagnostic problems refer to the analysis and monitoring of the following parameters:

- Electrocardiography (ECG);
- Photoplethysmography (PPG);
- Electroencephalography (EEG);
- Electrooculography (EOG);
- Electromyography (EMG);
- The Heart Rate Variability (HRV);
- The Oxygen Saturation in blood (SpO_2);
- The respiratory parameters.

The developed complex system consists of a multi-channel device for data acquisition of biomedical signals from the human body. It is connected to the personal computer through USB universal interface.

The device is based on analog modules of data acquisition and analog processing of the different biomedical signals and digital data acquisition module, based on a microprocessor, for reading the resultant analog signals after its processing and interaction with the personal computer.

The developed specialized software for acquisition and storage of data, operating system consists of a process with the highest priority and more secondary processes. The software process the collected data and offers them in a complex format at the output, that shows each section of the data stream in a necessary form of display, table or graphic, convenient for the user.

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