BIOSACA®

- An ambulatory recording device for neurology and sleep disorder diagnostics

LIGHTWEIGHT AND AMBULATORY

BIOSACA®

The Biosaca is a high-technology device used to record, store, transmit and display biosignals such as heart and brain activity, blood oxygen level etc. It is designed for ambulatory use, for both stationary and mobile operation in either the patient's home or at the hospital. Applications of the Biosaca are within the areas of EEG and sleep investigations. The equipment may be used for the recording and storage of biological and nonbiological signals, for sleep disorder and epilepsy investigations as well as studies of heart, brain and muscle function to name but a few uses. For more information, please visit www.hic.se.

The Biosaca from Hic AB is an exceptional ambulatory system for the recording, monitoring, storage and transfer of as many as 22 human bioparameters at the same time. The data can be stored in the Biosaca for later display and analysis or continuously displayed online in a remote PC.

Using the very latest technological developments, our engineers have succeeded in creating an exceptional, compact system with high quality and reliability.

The Biosaca consists of a powerful signal processor complete with an Analog/Digital converter, amplifier, PC card and batteries. Accessories include unique compact amplifier headboxes that enhance the quality of the signal, a sensor pad and a pulse oximeter. Other CE-approved sensors may be attached making it possible to measure a wide range of different bodily functions such as brain, heart and muscle activity, eye movement, breathing and body movements. Impedance can be checked at any time while monitoring.

High quality recording combined with patient comfort makes the Biosaca the perfect aid in long-term and ambulatory investigations. Since measurements can be made in the patient's own home, expensive hospitalisation can be avoided and more patients can be helped.

Compact, lightweight, attractive design

The Biosaca weighs only 650 grams with batteries and the headboxes are among the smallest on the market. No external boxes, e.g. for batteries or pulse oximeter, are necessary. This adds up to an exceptional recording device. Since the collection of data with the Biosaca is so unobtrusive, the chances of measuring difficult-to-capture disturbances is greatly increased.

No confusing displays or gauges

The Biosaca is ideal for use in the patient's home. All that needs to be done is for the patient to connect the measuring cables and the Biosaca begins recording immediately – silently and automatically. No dials to confuse the patient and no signals that can be misinterpreted. The Biosaca has one single button which is used exclusively for event marking. What's more, it is impossible to connect the cables incorrectly. All the connections were made with user-friendliness in mind.

High dynamic range

The Biosaca system is based on 16-bit resolution. This makes it a highly useful instrument in epilepsy investigations.

Almost unlimited collection time

The Biosaca is perfect for the long recording times involved in epilepsy investigations. It is actually possible to switch

The sensor pad doesn't affect patient comfort since it can be used in lieu of certain electrodes, which need to be attached to the patient's body.

PC cards or change batteries while collecting data without loosing the previously recorded data.

IR Transfer

The Biosaca is equipped with a special infrared window in order to communicate with the PC control program. This feature is used to continuously monitor sampling data, to set recording parameters or to send various commands to the Biosaca.

An exceptional sensor pad

HIC manufactures its own special sensor pad for the recording of body movements and other parameters.The sensor pad is simply placed under the patient's mattress. The sensor pad doesn't affect patient comfort since it can be used in lieu of certain electrodes, which need to be attached to the patient's body.

HIC Health Care International Consulting

HIC and its activities go back to 1989, when Associate Professor Gaby Bader founded the company Biosys AB. The Biosaca was developed in Biosys AB by Professor Bader, then head of the Sleep Laboratory at the Sahlgrenska University Hospital in Gothenburg, Sweden. Dr. Bader's idea was to create a device, which was capable of carrying out sophisticated sleep investigations in the patient's own home. This, he reasoned, would allow more people suffering from sleep disorders to be helped faster. The result was the SleepBox, the first of a growing number of products for the remote recording of bio-signals developed by Biosys. Both patients and technicians have attested to the company's proficiency in the field of home recording.

Software for analysis

Much effort has been put into making the Biosaca system adaptable to software analysis programs under the Microsoft® Windows Operating platform. From Hic, the following two programs are available:

***Sleep Studio** - A complete sleep analysis program.Available in two configurations: PSG and Apnea.*

***Monit** - A very easy-to-use program for the reading and of signals.An add-on module for statistics and manually set events of any kind is available.*

In addition to this there are analysis packages from other vendors.

An exceptional ambulatory system for the recording, monitoring, storage, and transfer of as many as 22 bioparameters at the same time.

Technical Data

The system is intended for use on both stationary and mobile patients.

Recorder/Main Unit

Design description	*Digital Signal Processor (DSP) with analog amplifiers and digital input for pulse oximeter.*
Storage medium	*A PCMCIA Flash card with up to the greatest available standard. Complete, uncompressed raw data on all channels.*
PC-card	*SanDisk PCMCIA Flash card. ATA type II or Compact Flash card using an adapter.*
Number of channels	*22 channels (16 channels from headboxes, 3 channels from the external pulse oximeter, 3 channels from the sensor pad).*
Analog/Digital converter (A/D converter)	*16 Bit.*
Sampling frequency	*OFF, 8, 16, 32, 64, 128 or 256 samples/second may be chosen individually for each channel.*
Input range	*±1 volt.*
Filters on headbox channels	*Notch filter 50/60 Hz.* *Adjustable filter: HP 0.1, 0.3, 1.0, 3.0 Hz.* *LP 15, 30, 40, 70, 100 Hz.*
Signal transfer	*IR*
Battery requirements	*6 x LR6/AA 1.5-volt.*
Dimensions (L x W x H)	*206 x 115 x 49 mm.*
Weight without/with batteries	*450/650 grams.*

Headbox

Input signals	*EEG, ECG, EOG, EMG, DC, sensor pad, thermistor, microphone, etc.*
DC level	*± 1.0 volt.*
AC level	*± 3.0 mvolts.*
Frequency response	*0.1-100 Hz.*
Dimensions (L x W x H)	*77 x 62 x 13 mm.*

Pulse oximeter

Pulse rate	*18-300 beats /minute.*
SaO2 Saturation	*Range 0-100%, accuracy 70-100%*
Plethysmography	*0-254 beats/minute.*

Sensor pad

For recording of biological parameters such as respiration and heart activities as well as movement.

CE

The equipment has been developed and manufactured in full compliance with the standards and regulatory documents found in the EC directives for medical devices, 93/42/EEC.

The Biosaca and Sleep Studio are cleared for the US market.
Biosaca and Sleep Studio are trademarks of Hic AB.

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