

TESTING MODULE FOR PHYSIOTHERAPY AND STIMULATION SIGNALS

Mod. EB-B4/EV

INTRODUCTION

EB-B4/EV is one of the modules that constitute the Interactive Practical Electronics System – I.P.E.S for the study of Biomedical Equipment.

It consists of a set of components and circuits used in biomedical equipment.

For the lessons development, the module operates in computerized mode, by means of the interactive software version of the handbook SWBB-B4/EV and the Unit mod. GAU/EV. The software inserts circuit variations and faults automatically, enabling the development of the lessons, even without the teacher's assistance.

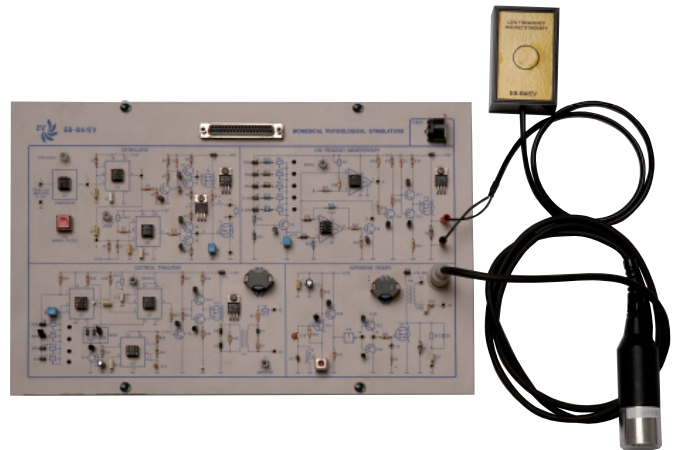
EB-B4/EV

Aim of this module consists in analyzing the circuits and instruments used when specific organs of the body must be stimulated.

Most apparatuses adopting these techniques are included in the biomedical instruments typically used in the fields of physiotherapeutic medicine and of limbs rehabilitation and reeducation after long immobility periods.

This module examines the following topics:

- Basic circuits of defibrillators (production of special high/ low intensity shocks applied to patients' heart), used also in pathophysiology in case of particular heart dysfunctions to be corrected.
- Instruments for electrostimulation: equipment used for therapeutical treatments based on excitation through electronic stimulation of nervous tissues and muscles, or for anaesthetic effects.
- Instruments of magnetotherapy based on the application of low frequency and intensity signals to obtain therapeutic effects in case of sprains, arthrosis and arthritis, sinusitis, ulcers, lancet wounds, etc...
- Ultrasound instruments: based on ultrasound energy generated by the oscillations of quartz transducers at particular frequencies above audible sounds. The therapeutical effects of ultrasounds regard the temperature increase in tissues and cavities, for example, for the microcirculation of gas bubbles in tissues.



TRAINING PROGRAM:

Defibrillators

- Charging/discharging electrical energy
- Storing energy
- Hand check
- Synchronization with ECG
- Electrodes

Electrotherapy

- Generation of signals
- Control of stimulation parameters
- Output stages
- Anaesthetic and analgesic effects
- Electrodes

Magnetotherapy

- Generation of signals
- Magnetic field
- Frequency range
- Electrodes

Ultrasound circuits and instruments

- Oscillators and frequency range
- Electrodes/quartz transducers
- Transmission of ultrasound waves
- Structure and mechanical coupling of transducer

TECHNICAL SPECIFICATIONS:

- Step-up transformer for electrical stimulation signals
- 1-MHz ultrasonic ceramic transducer
- HARTLEY oscillator
- Step-up transformer for ultrasound stimulation signals
- Low frequency transducer of magnetic field
- 2-mm interconnection and test points
- Jumpers for quick circuit modifications
- Fault simulation
- 37-pin connector for Interface Unit GAU/EV
- 8-way connector for Power Supply Unit
- Printed circuit board with protective treatment and silk-screen printed mimic diagram

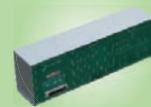
Dimensions: 386 x 248 x 40 mm

REQUIRED



**POWER SUPPLY
UNIT
PS1-PSU/EV**
- NOT INCLUDED -

POWER SUPPLY
 $\pm 12 V_{cc} - 0,5A$
 $+30V_{cc} - 2A$



**BIOMEDICAL SIGNAL GENERATOR/ACQUISITION
AND FAULT INSERTION UNIT - MOD. GAU/EV**
SOFTWARE SWBB-B4/EV
- NOT INCLUDED -



PERSONAL COMPUTER
- NOT INCLUDED -

INSTRUMENTS - NOT INCLUDED -
- MULTIMETER
- OSCILLOSCOPE

SUPPLIED WITH

STUDENT HANDBOOK: THEORY AND EXERCISES
**TEACHER HANDBOOK: WIRING DIAGRAMS
AND SOLUTIONS OF EXERCISES**



OPTIONAL

MODULE HOLDER - BOX/EV

