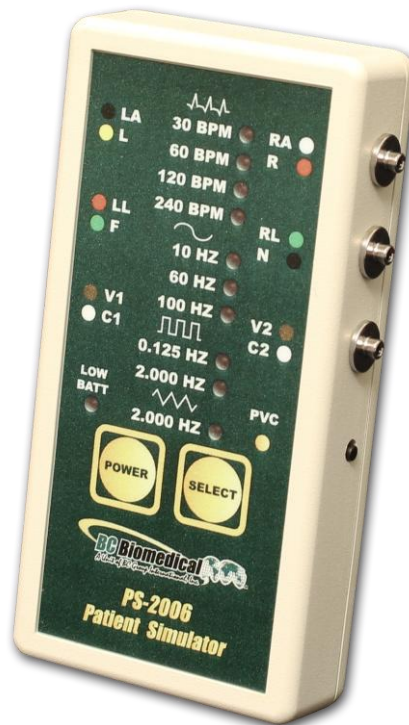




ECG PATIENT SIMULATOR SIX LEAD



PS-2006

USER MANUAL

**BC BIOMEDICAL
PS-2006
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WARNING - USE

The PS-2006 is intended for testing only and should never be used in diagnostics, treatment or any other capacity where it would come in contact with a patient.

WARNING - CONNECTIONS

All connections to patients must be removed before connecting the DUT to the PS-2006. A serious hazard may occur if the patient is connected when testing with the PS-2006. Do not connect any leads from the patient directly to the PS-2006 or DUT.

CAUTION - SERVICE

The PS-2006 is intended to be serviced only by authorized service personnel. Troubleshooting and service procedures should only be performed by qualified technical personnel.

CAUTION - ENVIRONMENT

Exposure to environmental conditions outside the specifications can adversely affect the performance of the PS-2006. Allow the PS-2006 to acclimate to specified conditions for at least 30 minutes before attempting to operate it.

CAUTION - CLEANING

Do not immerse. The PS-2006 should be cleaned by wiping gently with a damp, lint-free cloth. A mild detergent can be used if desired.

CAUTION - INSPECTION

The PS-2006 should be inspected before each use for obvious signs of abuse or wear. The PS-2006 should not be used and should be serviced if any parts are in question.

NOTICE – SYMBOLS

Symbol Description



Caution
(Consult Manual for Further Information)



Center Negative



Per European Council Directive 2002/95/EC,
do not dispose of this product as unsorted
municipal waste.

NOTICE – ABBREVIATIONS

AHA	American Heart Association
ANSI	American National Standards Institute
BPM	Beats Per Minute
C	Celsius
°	degree(s)
ECG	Electrocardiogram
F	Fahrenheit
Hz	hertz
IEC	International Electrotechnical Commission
Lbs	pounds
LED	Light Emitting Diode
mm	millimeter(s)
mV	millivolt(s)
NEDA	National Electronic Distributors Association
Ω	ohm(s)
USA	United States of America
V	Volts

NOTICE – DISCLAIMER

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NOTICE – CONTACT INFORMATION

BC BIOMEDICAL
BC GROUP INTERNATIONAL, INC.
3081 ELM POINT INDUSTRIAL DRIVE
ST. CHARLES, MO 63301
USA

1-800-242-8428

1-314-638-3800

www.bcgrouptl.com

sales@bcgrouptl.com

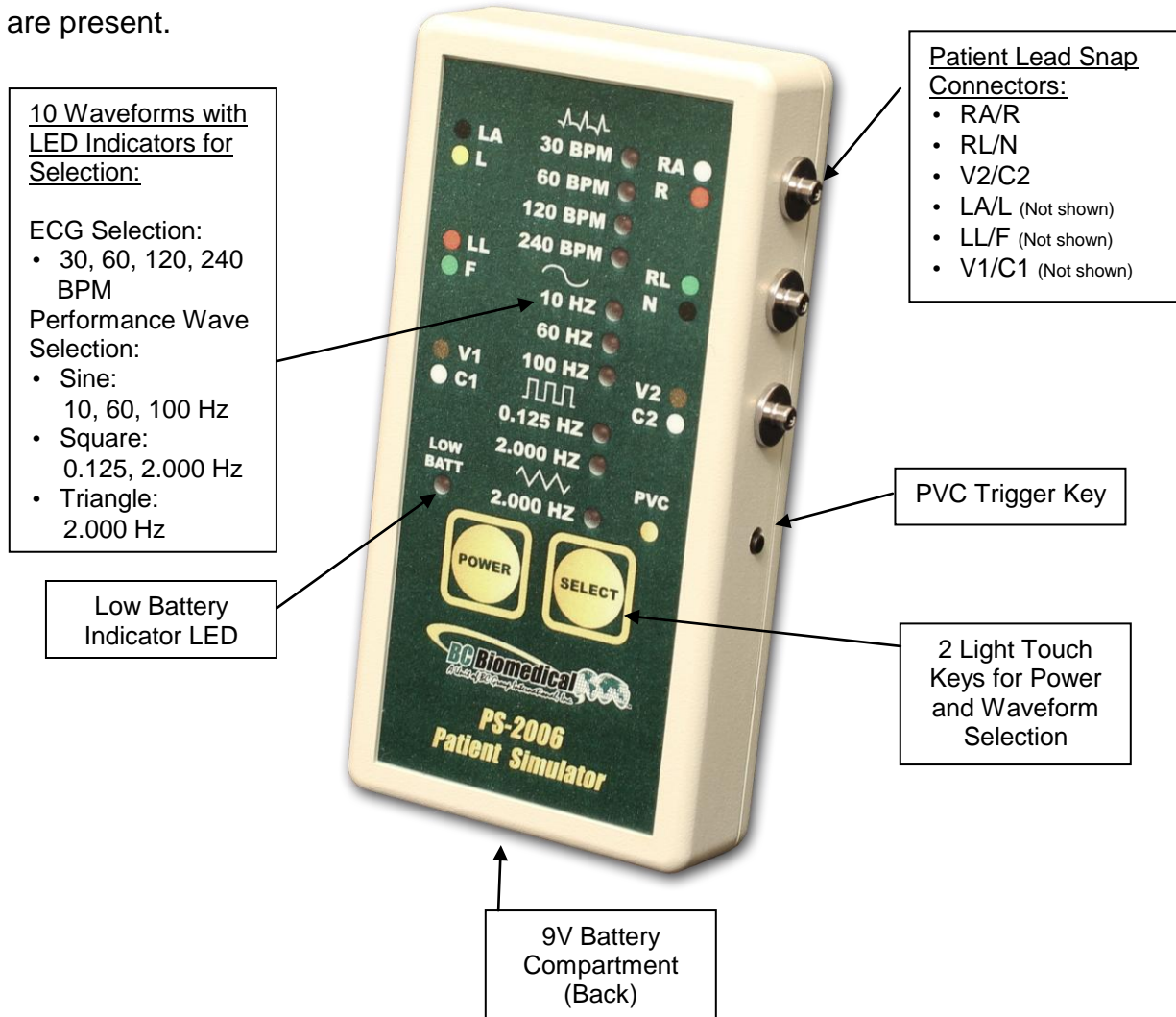
**BC BIOMEDICAL
PS-2006
PATIENT SIMULATOR**

The Model PS-2006 is a Microprocessor based Patient Simulator. It provides ECG Simulation with four waveforms with constant QRS duration and six machine performance testing waveforms. The following are highlights of some of the main features:

- 6 PATIENT LEAD SNAP CONNECTORS
- ECG: 30, 60, 120 AND 240 BPM
- PVC ARRHYTHMIA
- SINE: 10, 60 AND 100 Hz
- SQUARE: 0.125 AND 2.000 Hz
- TRIANGLE: 2.000 Hz
- AMPLITUDE ACCURACY: $\pm 2\%$
- FREQUENCY ACCURACY: $\pm 0.5\%$ OF SETTING
- 9 VOLT BATTERY POWER
- LOW BATTERY INDICATOR
- % BATTERY LIFE INDICATOR
- HIGH IMPACT PLASTIC CASE
- LIGHT TOUCH KEYS

LAYOUT

This section looks at the layout of a PS-2006 and gives descriptions of the elements that are present.



The unit is controlled by 2 light touch keys. They allow the user to select waveforms and control the power for the unit. There is a light touch key that allows the user to trigger the PVC Arrhythmia.


There are 10 LEDs to provide the user with information about waveforms that are generated and 1 LED for Low Battery Indication.

Patient Lead Snap Connectors

AHA and IEC color-coded labels are located on the face of the unit to aid in connecting the corresponding AHA and IEC Patient Leads.

AHA Label	IEC Label	Description
RA	R	Right Arm
LA	L	Left Arm
RL	N	Right Leg (reference or ground)
LL	F	Left Leg
V1 V2	C1 C2	V Leads (V1-V2) (U.S. and Canada) also referred to as pericardial, precordial or unipolar chest leads Chest Leads (C1-C2) (International)


Waveform Selection

There is one key and 10 LEDs to use for Waveform Selection. The LEDs indicate which waveform is generated. The  key sequentially selects each waveform. The microprocessor sends the stored waveform information of the selected waveform to a Digital to Analog converter that generates an accurate analog representation. This waveform is then sent through a resistor network, developing the appropriate signals on the output terminals.

PVC Trigger


A switch is used to manually trigger PVC Arrhythmias. When the output is set to Normal Sinus Rhythm, the PVC switch will cause the next NSR output to be replaced by a PVC waveform. PVC triggers will be accumulated and the PVC waveform will be output until all PVCs have been run.

Power Key

The  key toggles the unit on and off.

Auto Power Off



The unit will automatically turn off after 10 minutes of no key activity to conserve the battery.

To override this feature and keep the unit on continuously, press and hold the  key while turning the unit on. This will keep the unit on until it is manually turned off. The “Low Batt” LED will illuminate for 3 sec to indicate that the Auto Power Off feature has been turned off.

Battery

The unit utilizes a 9 Volt Alkaline Battery in the rear battery compartment. When the unit detects a LOW BATTERY, the LED in the lower left of the face will blink, indicating the need to change the battery.

Percent of Battery Life Indicator

The unit provides a visual indication of the battery life left on the 9 Volt Alkaline Battery. An Analog to Digital converter monitors the battery voltage. Continuously holding down the  key will change the 10 waveform LEDs into a Percent of Battery Life display, with each LED representing 10% intervals. The Indicator will strobe up to the present battery level and flash. This sequence will continue while the  key is depressed.

MANUAL REVISIONS

<u>Revision #</u>	<u>Revisions Made</u>
Rev 01	Origination
Rev 02	Pictures Updated
Rev 03	Format Updated
Rev 04	Misc. Edits, Format Updated, and Pictures Updated
Rev 05	Misc. Edits

LIMITED WARRANTY

WARRANTY: BC GROUP INTERNATIONAL, INC. WARRANTS ITS NEW PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER THE SERVICE FOR WHICH THEY ARE INTENDED. THIS WARRANTY IS EFFECTIVE FOR TWELVE MONTHS FROM THE DATE OF SHIPMENT.

EXCLUSIONS: THIS WARRANTY IS **IN LIEU OF** ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE.

BC GROUP INTERNATIONAL, INC. IS NOT LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

NO PERSON OTHER THAN AN OFFICER IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR ASSUME ANY LIABILITY.

REMEDIES: THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE: (1) THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, WITHOUT CHARGE. (2) AT THE OPTION OF **BC GROUP INTERNATIONAL, INC.**, THE REFUND OF THE PURCHASE PRICE.

SPECIFICATIONS

PATIENT SIMULATION			
RATE	NORMAL SINUS RHYTHM	30, 60, 120, 240 BPM	
	PERFORMANCE WAVEFORMS	SINE	10, 60, 100 Hz
		SQUARE	0.125, 2.0 Hz
		TRIANGLE	2.0 Hz
	ACCURACY	± 0.5 %	
AMPLITUDE	LEAD 1	1.75 mV	
	LEAD 2	2.75 mV	
	LEAD 3	1.00 mV	
	ACCURACY	± 2 % Lead II	
IMPEDANCE	LEAD TO LEAD	1000 Ω	

PHYSICAL & ENVIRONMENTAL		
CONSTRUCTION	ENCLOSURE	ABS Plastic
	FACEPLATE	Lexan, Back printed
SIZE	5.15 x 2.89 x 1.06 Inches (130.8 x 73.4 x 26.9 mm)	
WEIGHT	≤ 0.5 Lbs (0.23 kg)	
OPERATING RANGE	15 to 40 °C (59 to 104 °F)	
STORAGE RANGE	-20 to 65 °C (-4 to 149 °F)	

ELECTRICAL	
BATTERY	9 V Alkaline Battery (ANSI/NEDA 1604A or equivalent)

NOTES



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