

User Manual

# PLA

## Pacer Load Adapter



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Notices

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## I. INTRODUCTION

Congratulations on your purchase of the BC Biomedical *Model PLA Pacer Load Adapter*. The *PLA* works with the *BC Biomedical Defibrillator/Pacemaker Analyzer* to provide a range of simulated patient loads for transthoracic or external invasive pacemakers. A total load resistance of 50Ω, 100Ω, 300Ω, 500Ω, 600Ω, 1000Ω, or 1500Ω may be selected to meet the requirements of various pacemaker manufacturers.

The *PLA* includes:

- 1 protective electrode cover (black)
- 1 banana test lead (red)
- 1 adapter, 2mm female to 4mm male
- 1 adapter, 4mm female to 2mm male

## II. WARNINGS

**CAUTION:** Discharge of high-energy defibrillator pulses through the *PLA* will damage the *PLA* load resistors. The *PLA* is designed for a maximum RMS current of 50mA at any input. This is equivalent to a rectangular current pulse of 200 mA, with a pulse width of 20 mS, and a rate of 180 pulses per minute (3 pulses per second).

**NOTE:** To calculate the RMS (the square root of the mean of the square) current in a rectangular pulse waveform with a pulse amplitude of 0.2 A, a pulse width of 20 mS, and a period of 333 mS: The square of the amplitude is  $0.2 * 0.2 = 0.04$ ; the mean (average) of the squared waveform over one period is  $0.04 * 20/333 = 0.00240$ ; and the square root of this average is 0.049A.

### III. OPERATION WITH DA-2000P and DEFIBRILLATOR WITH TRANSTHORACIC PACEMAKER

#### Additional Equipment Needed:

- 2 alligator clips (P/N 48009)
- 1 (2mm-female to 4mm-male banana jack)
- 1 banana test lead

- 1) Attach the *PLA* to either paddle electrode of the *DA-2000P*, by placing it on top of the electrode. (See Figure 1.)
- 2) Cover the other *DA-2000P* electrode with the black protective cover that is included with the *PLA*. This cover is a safety feature, designed to limit contact with the exposed electrode.
- 3) Cut the two pacer pads off the set of pacer leads from the defibrillator, and discard the pads.
- 4) Attach the two alligator clips to the two banana test leads.
- 5) Connect the alligator clips to the cut ends of the defibrillator pacer leads.

**NOTE:** A more permanent set of test leads can be made by adding banana plugs to the ends of cut-off pacer pad cables.

- 6) Connect one of the banana plugs to the desired load impedance on the *PLA*, and connect the other banana plug to the other electrode (through the safety cover).
- 7) Follow the *DA-2000P* User's Guide instructions for pacemaker testing.

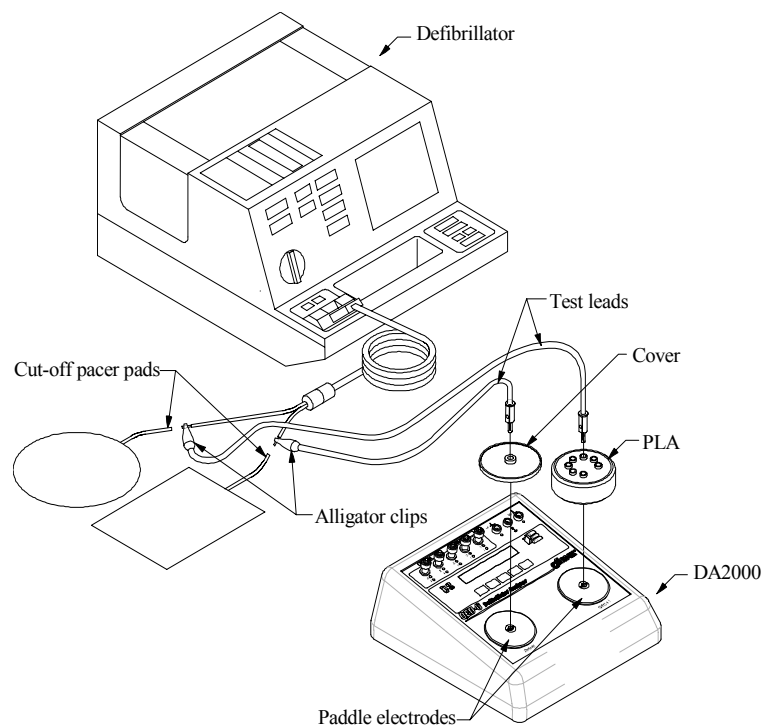


Figure 1. Connecting the PLA, DA-2000P and Defibrillator

## IV. SPECIFICATIONS

- Input Connections:** Seven banana jacks provide input connections. Inputs are labeled with the total load impedance in ohms. The banana jacks mate with standard size banana plugs (0.166" diameter by 9/16" long).
- Output Connections:** The output of the Load Adapter connects to a paddle input (electrode) of the DA-2000P.
- Load Selection:** The load provided by the Load Adapter is selected by connecting the input signal to the appropriate input jack.
- Load Impedance:** When the Load Adapter is attached to the *DA-2000P*, the user is able to select an input load impedance from the following values: 50 $\Omega$ , 100 $\Omega$ , 300 $\Omega$ , 500 $\Omega$ , 600 $\Omega$ , 1000 $\Omega$ , and 1500 $\Omega$ . The 50 $\Omega$  selection is the load impedance of the *DA-2000P* itself. The load resistances have a tolerance of  $\pm 1\%$ , a temperature coefficient of  $\pm 100\text{ppm}/^\circ\text{C}$ , and low enough inductance to not interfere with the measurements being performed.
- Enclosure:** The enclosure is made of a nonconductive material. It connects directly to one of the *DA-2000P* paddle inputs and covers the paddle input to prevent accidental contact by the user.

## V. WARRANTY

This Warranty is limited and applies only to new products, except for computer-based software which is covered under a separate Warranty Policy, manufactured by BC Group International, Inc. BC Group International, Inc. makes no warranty whatsoever regarding the condition of used products.

BC Group International, Inc. warrants the instrument (hereinafter collectively referred to as "Products" or "Product") for a period of one (1) year from the original purchase date against defective materials or workmanship. This Warranty is limited to the original purchaser (the "Purchaser") and cannot be assigned or transferred. All claims under this Limited Warranty must be made in writing to BC Group International, Inc., Attention: Service Department. Purchaser must ship the Product to BC Group International, Inc., postage pre-paid. BC Group International, Inc. shall either repair or replace with new or like-new, at its option and without cost to the Purchaser, any Product which in BC Group International, Inc.'s sole judgment is defective by reason of defects in the materials or workmanship.

This Warranty is VOID if the Product has been damaged by accident or misuse, or has been damaged by abuse or negligence in the operation or maintenance of the Product, including without limitation unsafe operation, operation by untrained personnel, and failure to perform routine maintenance. This Warranty is VOID if the Product has been repaired or altered by persons not authorized by BC Group International, Inc., or if the Product has had the serial number altered, effaced, or removed. This Warranty is VOID if any of the Products has not been connected, installed or adjusted strictly in accordance with written directions furnished by BC Group International, Inc.. Batteries, fuses, lightbulbs, and other "consumable" items used in any of the Products are not covered by this Warranty. Software utilized in conjunction with any of the Products is not covered by the terms of this Warranty but may be covered under a separate BC Group International, Inc. software warranty.

We will continue to stock parts for a maximum period of five (5) years after the manufacturer of any equipment has been discontinued. Parts shall include all materials, charts, instructions, diagrams, and accessories that were furnished with the standard models.

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**THIS WARRANTY IS VOID UNLESS THE PURCHASE REGISTRATION CARD HAS BEEN COMPLETED AND MAILED TO US WITHIN TEN (10) DAYS OF PURCHASE.**

## VI. TECHNICAL SUPPORT

BC Biomedical's Pacemaker Load Adapter is backed by a superior support staff. If the PLA ever fails to work perfectly, please contact the Technical Support Staff.

### Written Communications

You may write a letter with your comments and send it to:

BC Biomedical  
BC Group International, Inc.  
3081 Elm Point Industrial Dr  
St. Charles, MO USA 63301  
OR  
E-mail: [sales@bcgroupintl.com](mailto:sales@bcgroupintl.com)

### Phone Support

You can telephone the Technical Assistance Center at 314-638-3800 or 1-800-242-8428 between 8:00 AM and 4:30 PM Central Standard Time (CST) Monday through Friday, except holidays.

Whichever method of contact you choose, please provide the following information:

- Product name and serial number
- Revision level of your software
- The specific steps which reproduce your problem
- Any error codes displayed on screen (descriptions of error codes are available in Appendix A)
- A daytime phone number, fax number, and/or email address (if available)
- Your name / company