

Impulse 7010 Defibrillator Selectable Load Accessory

Application Note



The Impulse 7010 Defibrillator Selectable Load Accessory, in conjunction with Impulse 7000 Defibrillator/External Pacer Analyzer, is specifically designed to facilitate compliance with the IEC 60601-2-4 and AAMI DF80 standards.

For defibrillation to be successful, a sufficient amount of electrical current must be delivered to the heart muscle. Defibrillation current is affected by transthoracic impedance (the body's resistance) to the current flow. Measured in ohms of resistance, impedance comes from all body tissues. Impedance in humans has been shown to vary anywhere from 25 to 180 ohms with the average impedance of an adult around 70 to 80 ohms according to a study conducted by the American Heart Association (AHA).¹

Section 6.8.3 of the IEC 60601-2-4 standard and AAMI DF80 standards require defibrillators to be tested on different resistance loads of 25, 50, 75, 100, 125, 150, and 175 ohms to ensure proper current is delivered to patients with different impedances. Impulse 7010 is the only tool available today with the capability to test defibrillators beyond 175 ohms. A 200-ohms option gives manufacturers the capability to test defibrillators under extreme impedance conditions.

A well-designed defibrillation waveform must measure patient impedance electrically and adjust the waveform shape and duration accordingly to optimize waveform performance across the range of anticipated impedance values.

¹ American Heart Association. Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Care. *Circulation Supplement*. 2000; 102:8

Below are defibrillator discharge curves captured by Ansur PC-based automation software. To compensate for the resistance change (increasing from 50 ohms to 150 ohms), the defibrillator²

automatically adjusted the current level (reduced), voltage level (increased) and pulse width (increased) to maintain constant energy (100 Joules).

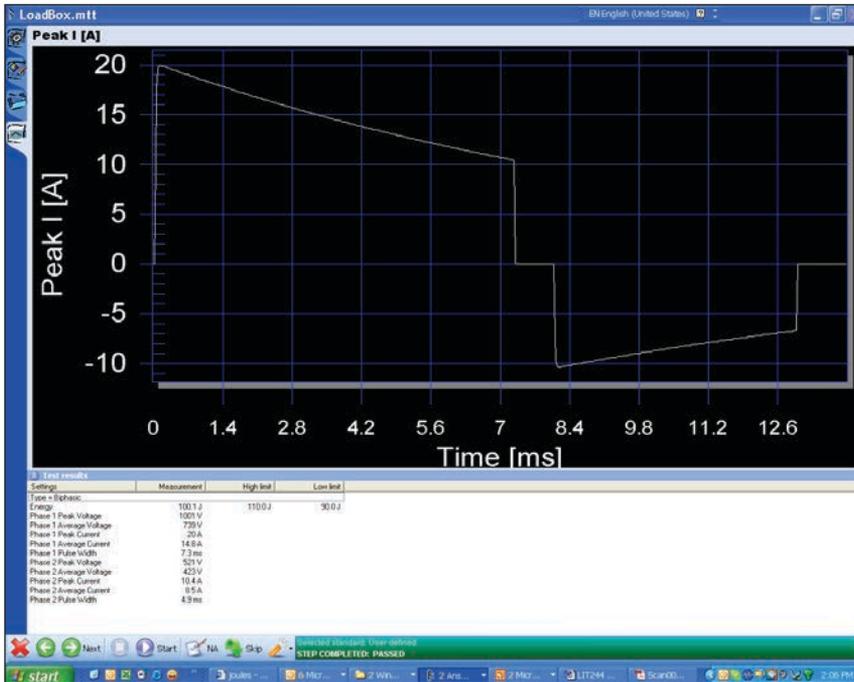


Figure 1: Defibrillator discharge curve during energy measurement test (external load 50 ohms, preset energy level 100J).

² LIFEPAK 20 used in this example.

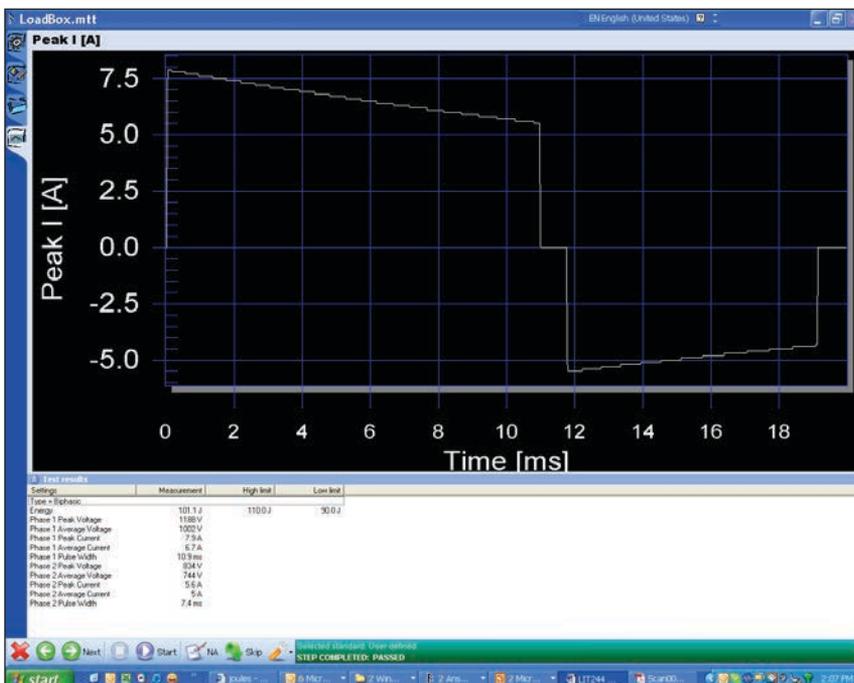


Figure 2: Defibrillator discharge curve during energy measurement test (external load 150 ohms, preset energy level 100J).

Use of Impulse 7010 is easy. Simply connect the Impulse 7010 output connectors to the input connectors of Impulse 7000 as shown in the Figure 3 below. The various connection

combinations available through the Impulse 7010's rotary switch provide eight different loads for a defibrillator discharge.

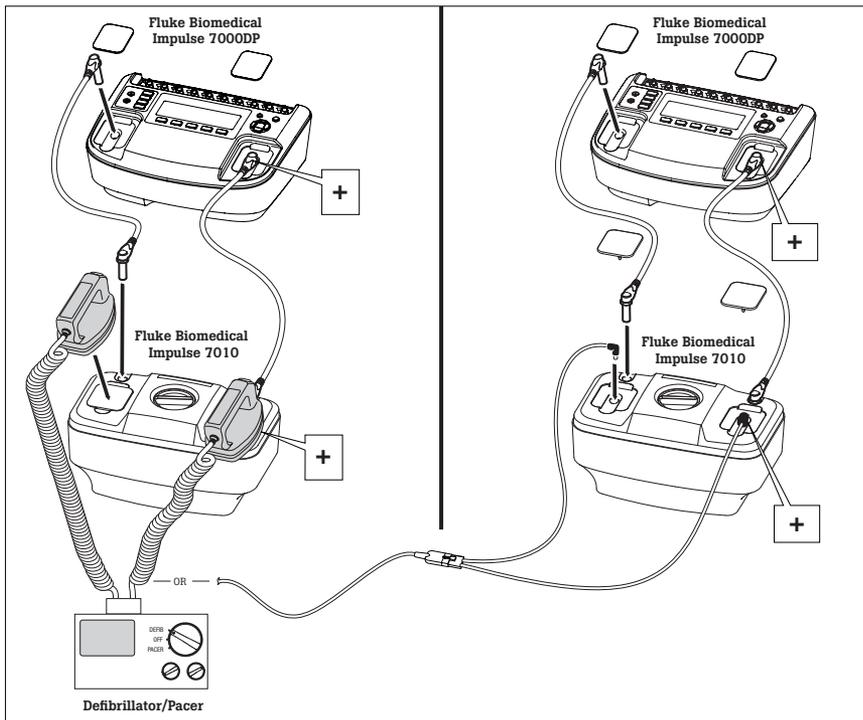


Figure 3.

Fluke Biomedical Regulatory Commitment

As a medical test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required

Fluke Biomedical.

Trusted for the measurements that matter.

Fluke Biomedical

6045 Cochran Road
Cleveland, OH 44139-3303 U.S.A.

For more information, contact us at:

(800) 850-4608 or Fax (440) 349-2307
Email: sales@flukebiomedical.com
Web access: www.flukebiomedical.com

©2014 Fluke Biomedical. Specifications subject to change without notice. Printed in U.S.A.
8/2014 6003256A_EN

Modification of this document is not permitted without written permission from Fluke Corporation.