

User Manual

SAM Student Auscultation Manikin

Models: 360-8800 and 360-8900



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Introduction

Thank you for purchasing the Student Auscultation Manikin (SAM) an interactive manikin for teaching students the art of auscultation.

Safety Precautions

The following symbols are applicable to the device.



Attention: Read and understand all warnings and cautions before use.

IPX0

No degree of protection against ingress of water.



This product does not contain natural rubber latex.



Caution:

- **SHOCK HAZARD:** Do not remove protective covers on any components of the SAM manikin. Hazardous voltages may be present. Cabinet panels for this System and all components must be in place while the system is in use. All the internal adjustments, replacements and initializations should be made by a qualified technician.
- Do not immerse any of the connectors used in the System in any fluid.
- Disconnect all cables and AC power before performing any cleaning procedures. Use standard alcohol swab or wipe (70% Isopropyl Alcohol). Do not immerse any part of the SAM.
- Do not wrap anything around the manikin neck that will prevent heat dissipation.
- No serviceable parts. Do not attempt to repair or service the SAM. Return to Cardionics for any and all repairs. Call 281-488-5901 for service directions before returning.

Product Description

SAM, Student Auscultation Manikin, is an interactive manikin for teaching students the art of auscultation. The SAM system consists of a half-body male manikin and laptop computer.

The manikin simulates heart, lung, bowel, bruit, and a carotid pulse located on SAM's left side. Sounds are heard with standard acoustic or electronic stethoscope.

Simulations are controlled by a computer running the SAM software. Sounds are selected from a library and played from the manikin. The software provides volume control for various sites, visual aid such as a phonocardiogram, custom lecture setup, and case study videos.

Getting Started

Congratulations on the purchase of the SAM. To get up and running quickly, perform the following steps:

❖ Supplied with Items

The SAM comes equipped with a computer and software already installed. The following accessories should be included:

1. Computer with Software already installed.
2. Computer power supply.
3. (2) USB cables.
4. SAM power supply.
5. SAM Manikin

❖ SAM Installation

Connect the following supplied accessories before turning the system on.

1. Place the SAM manikin and computer on a flat table or desk.
2. Locate the two USB cables. The SAM requires both USB ports to operate. Connect the two USB cables from the SAM to the computer.
3. Connect the SAM power supply to the SAM and wall outlet.
4. Connect the computer power supply to the computer and wall outlet.

❖ Powering the SAM System

After making the necessary connections described in the previous section the system is ready to be powered.

1. Locate and press the SAM power (on/off) button located on the left side of the base. The power switch will illuminate green indicating the manikin is ready.
2. Power on the computer and wait for the system to boot up.
3. Once the computer is ready and the desktop is visible locate the SAM icon on the desktop and launch the SAM program.

❖ Administrative Account Setup

The SAM software has features that can be turned on and off enhancing the teaching experience. In order to maintain honesty when students test with the SAM, the software provides password protected accounts. Although the software comes with a default administrator name and password, it is recommended the account be changed.

The following procedure instructs the administrator on how to change the default admin account. For extra help regarding the Setup Configuration window refer to Table 4 on page15.

1. Open the Setup Configuration window by clicking Setup found in the upper-right toolbar.
2. Log in using the default name and password: SAM123 and password SAM123. Press enter. Note: The name and password entries are case sensitive.
3. In the setup configuration window click the Accounts button to display a drop down menu. Select "Admin Account." The Login Account Change window will appear.
4. Enter a new administrative name and password. Press enter.
5. Click the Logout button in the bottom-left corner to log out as the default administrator. The Setup Configuration window will disappear.
6. Reopen the Setup Configuration window by clicking Setup found in the upper-right toolbar.
7. Now log in using the new admin name and password.

❖ Adding Additional Accounts

Only the administrator can add or remove accounts. For extra help regarding the Setup Configuration window refer to Table 4 on page 15.

1. Log in using the administrative privileges by clicking Setup found in the upper-right toolbar.
2. In the Setup Configuration window click the Accounts button to display a drop down menu. Select "Add/Replace." The Select Account to Add/Replace window will appear.
3. The window displays all accounts. Accounts with "\$" next to them indicate empty accounts. Type an account number to add or replace and click Okay.
4. The Login Account Change window will appear. Enter a new name and password. Press enter. A new account is added.

SAM Software Overview

The PC application contains three pages, Auscultation, Lectures, and Case Studies. If the Case Studies page is not visible refer to Software Upgrade on page 16.

❖ Auscultation

The Auscultation page is the interface for the manikin. Sounds are selected from a library and played through the manikin. All heart and heart and lung sound combinations activate the carotid pulse in SAM's left neck.

In addition to auscultation, some sounds have echocardiograms. These echocardiograms will appear as blue or cyan circle icons on the manikin panel for a given sound selection. Clicking on an echocardiogram icon will pop up a short video that will loop. To stop or return back to the Auscultation page click anywhere on the video. If echocardiograms are not part of the SAM software refer to Software Upgrade on page 16.

The figure and table that follow describes the controls and features of the Auscultation page.

Figure 1: Auscultation Page

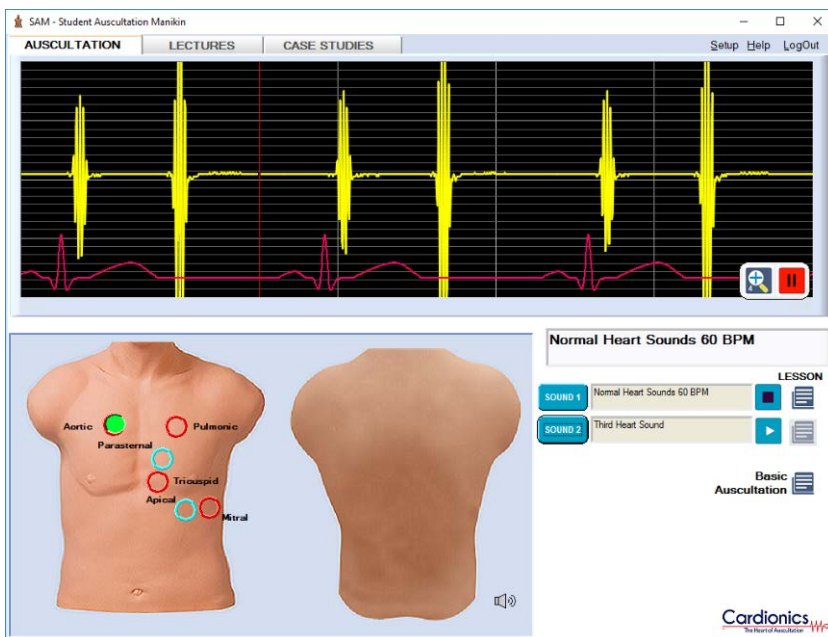








Table 1: Auscultation Page Functions

Name	Function	Icon
Setup	Opens the Setup Configuration window. Allows the user to log in with special permissions, enable editing and assignments, and test mode.	
Help	Contains additional information regarding the software including a copy of this manual.	
Logout	Logs the user out of special permissions. Recommended after enabling student test mode. Use Setup to log back in.	
Phonocardiogram	Displays sound and corresponding ECG, if any, for a selected auscultation site.	
Zoom	Steps through 1, 2, 4, and 8 magnification settings for the	

Name	Function	Icon
	phonocardiogram.	
Pause	Freezes the phonocardiogram and ECG, if any. Button toggles between pause and resume.	
Manikin Panel	Representation of the manikin and auscultation sites. Depending on the sound or case selected various icons become visible. Selecting an icon activates the phonocardiogram and outputs the corresponding sound to the headphone port located on the manikin base. Right clicking the manikin panel will display the site volume controls.	
Scenario Title Box	Displays the title of the sound currently playing.	
Sound 1	Opens the Sound Library window for selecting a scenario to play.	
Sound 2	Opens the Sound Library window for selecting a scenario to compare with Sound 1. This feature is optional.	
Sound Title Box 1	Displays the scenario assigned to Sound 1.	
Sound Title Box 2	Displays the scenario assigned to Sound 2.	
Lesson (icon)	Informative document pertaining to the scenario displayed in the Sound Title Box, if any.	
Basic Auscultation	Informative document regarding auscultation.	
Volume Control	Opens the sound volume control for adjusting the sounds levels. Right clicking the manikin panel also opens the sound controls.	

❖ Lectures

The Lecture page allows for the creation and editing of lectures. The figure and table that follow describes the controls and features of the Lecture page.

Figure 2: Lectures Page

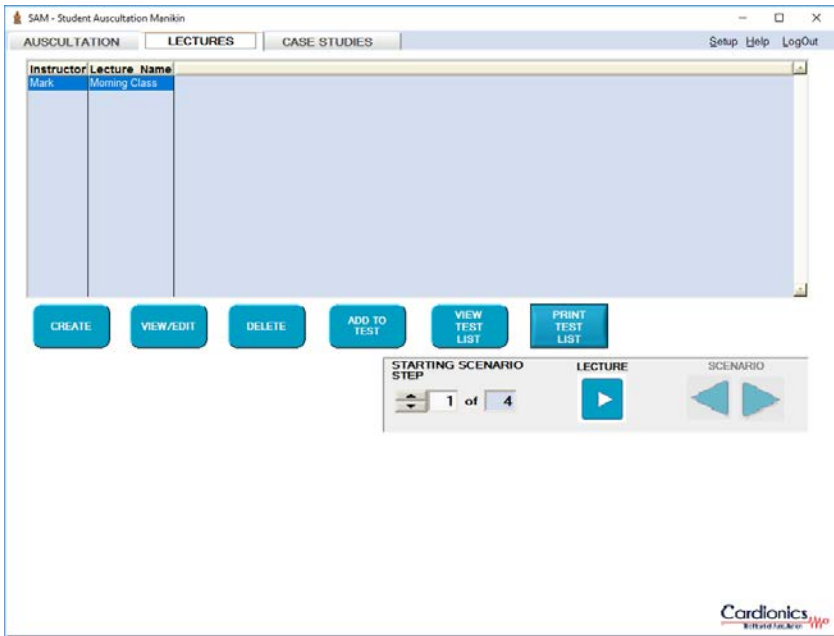










Table 2: Lecture Page Functions

Name	Function	Icon
Lecture Table	Lists all available lectures. Right clicking on an entry will display additional options.	
Create	Opens the Lecture Editor window for creating a new lectures.	
View/Edit	Opens the Lecture Editor window for a selected lecture in the lecture table.	
Delete	Deletes the selected lecture in the lecture table. At least one lecture must remain in the table.	

Name	Function	Icon
Add to Test	Opens a drop down box containing five tests slots for assigning a lecture.	
View Test List	Opens the Lecture Test Assignment Summary window. The window displays a lists of lectures assigned to the five test slots, if any.	
Print Test List	Prints both lectures and cases, if any, to a default printer.	
Starting Scenario Step	Allows the user to start the lecture at a different sound set other than the first.	
Lecture	Starts the lecture program highlighted in the lecture table. The program switches to the Auscultation page and begins playing sounds in the manikin.	
Scenario buttons	Navigates between sounds within a lecture.	

❖ Creating Lectures

Lecture is a convenient process for combining sound sets and presenting them to a group or lecture hall. Two or more sounds can be preloaded and played in sequence. Lectures can also be used to test students. To create a lecture, follow the steps below.

1. Log in with administrative privileges found in Setup located in the upper-right toolbar. For extra help regarding the Setup Configuration window refer to Table 4 on page15.
2. Verify that the Enable Lecture Assigning is on. Click Apply and then Close.
3. Navigate to the Lecture page.
4. Click Create to open the Lecture Editor. See Figure 3.
5. Enter an Instructor name and Lecture title.
6. Double click the first field to open the Sound Library. Select a sound from the Simulated or Real Sound tab, if available.
7. Continue to add sounds as desired. When finished click Done.

Figure 3: Lecture Editor

LECTURE EDITOR

Instructor

Lecture

Scenarios

1	<input type="text" value="Aortic Heart Sounds\Aortic Regurgitation"/>
2	<input type="text" value="Mitral Heart Sounds\Mitral Regurgitation Mild"/>
3	<input type="text"/>
4	<input type="text"/>
5	<input type="text"/>
6	<input type="text"/>
7	<input type="text"/>
8	<input type="text"/>
9	<input type="text"/>
10	<input type="text"/>
11	<input type="text"/>
12	<input type="text"/>
13	<input type="text"/>
14	<input type="text"/>
15	<input type="text"/>
16	<input type="text"/>
17	<input type="text"/>
18	<input type="text"/>
19	<input type="text"/>
20	<input type="text"/>

NOTE: A step with no assignment denotes the ending step of the sequence.

❖ Case Studies

The Case Studies page contains a library of videos showing patient and health care provider interaction. In addition, the manikin is configured for the condition shown in the video. The figure and table that follows describes the controls and features of the Case Studies page.

Figure 4: Case Studies Page

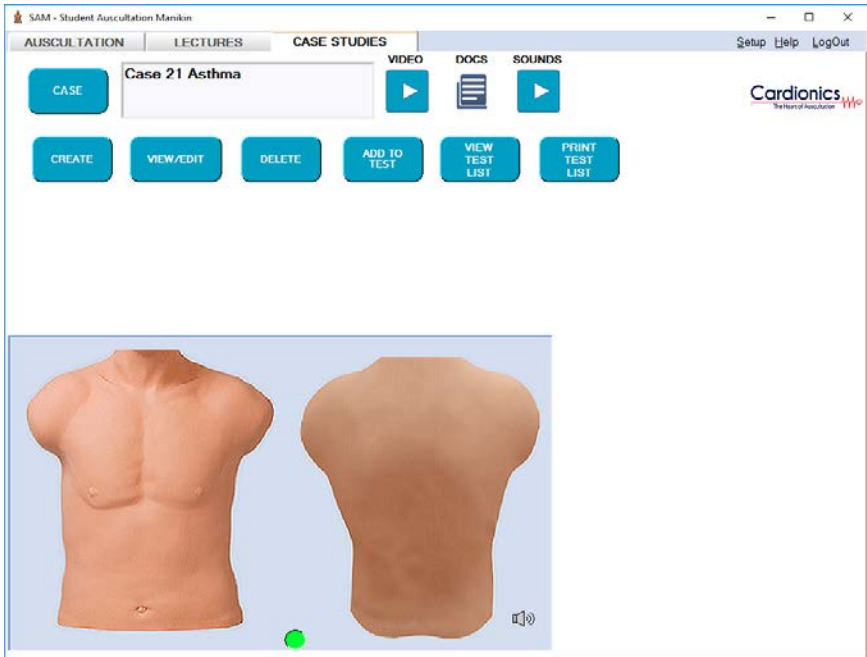













Table 3: Case Studies Page Functions

Name	Function	Icon
Case	Opens the case studies video library.	
Create	Opens the Case Edit window for creating a new case study.	
View/Edit	Opens the Case Edit window for the case shown in the case title box.	
Delete	Deletes the case study shown in the case title box. Only custom case may be deleted. Standard cases that come	

Name	Function	Icon
	with the software cannot be deleted.	
Add to Test	Opens a drop down box containing five tests slots for assigning a case study.	
View Test List	Opens the Case Assignment Summary window. The window displays a lists of cases assigned to the five test slots, if any.	
Print Test List	Prints both lectures and cases, if any, to a default printer.	
Video	Starts the video shown in the case title box. Selecting the button again stops the video. Once the video reaches the end the user must click this button again to remove the video screen.	
Docs	Opens the medical record pertaining to the case shown in the case title box.	
Sounds	Configures the manikin to the case shown in the case title box.	
Manikin Panel	Representation of the manikin and auscultation sites. Depending on the sound or case selected various icons become visible. Selecting an icon activates the phonocardiogram and outputs the corresponding sound to the headphone port located on the manikin base. Right clicking the manikin panel will display the site volume controls.	
Volume Control	Opens the sound volume control for adjusting the sounds levels. Right clicking the manikin panel also opens the sound controls.	

❖ Creating a Custom Case

In addition to case studies provided by Cardionics custom videos can be uploaded. Place all custom videos in the C:\CardionicsSAMIIVideoAndDocs folder. To create a custom case, follow these steps.

1. Log in with administrative privileges found in Setup located in the upper-right toolbar. For extra help regarding the Setup Configuration window refer to Table 4 on page15.
2. Verify that the Enable Case Editing is on. Click Apply and then Close.
3. Navigate to the Case Studies page.
4. Click Create to open the Case Edit window. See Figure 5.
5. Enter a Case name and Instructor name.
6. Choose a sound associated with the custom case by clicking Browse next to Sound Set Select. Select a sound from the Simulated or Real Sound tab, if available.
7. Link to the custom video by clicking Browse next to Video File Select.
8. Link to a custom patient record, if any, by clicking Browse next to Case Doc's File Select. Note: Only files in the C:\CardionicsSAMIIVideoAndDocs folder can be selected. Place custom videos in this folder before creating a case.
9. When finished click Done.

Figure 5: Case Editor

The screenshot shows a window titled "CASE EDIT" with a subtitle "Create New Case or Edit Existing Case". The window contains several input fields and buttons:

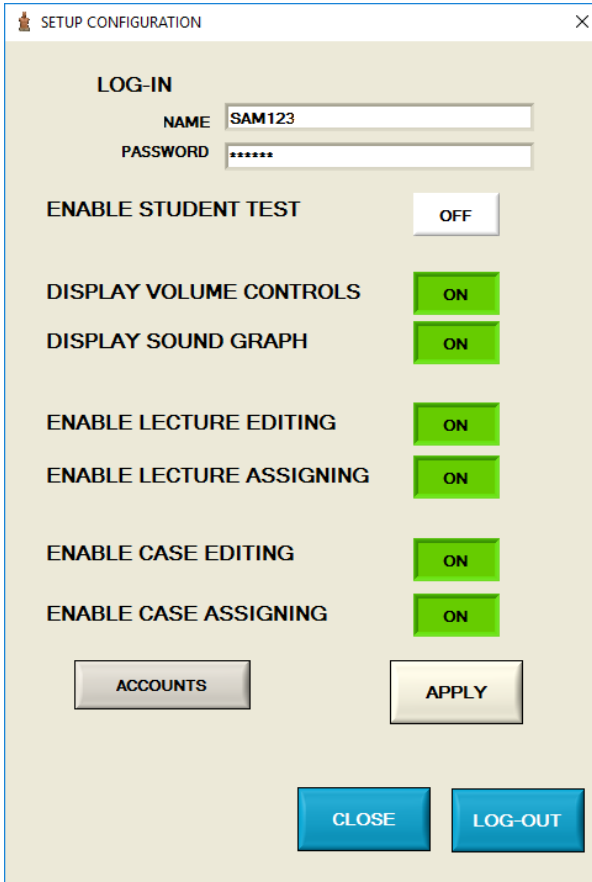
- Case Name:** A text box containing "Case Example".
- Instructor:** A text box containing "Mark".
- Sound Set Select:** A button labeled "Browse" followed by a text box containing "Aortic Heart Sounds\Aortic Regurgitation_E1".
- Sound Set Description:** A text box containing "Aortic Regurgitation".
- Video File Select:** A button labeled "Browse" followed by a text box containing "OSCE3PartIHistory(2).mp4".
- Case Doc's File Select:** A button labeled "Browse" followed by a text box containing "Aortic_Valve_Regurgitation_female.pdf".

At the bottom of the window are two buttons: "CANCEL" and "DONE".

Student Testing

SAM enhances the learning capability by turning on or off various features. Titles for sounds and case studies may give away SAM's condition. SAM allows the instructor to suppress titles, limit access to volume controls and hide the phonocardiogram. Lecture and case editing can also be disabled to prevent tampering. To access configuration control log in using administrative privileges by clicking Setup found in the upper-right toolbar. For extra help regarding the Setup Configuration window refer to Table 4 on page15. Below is the Setup Configuration window.

Figure 6: Setup Configuration



The image shows a window titled "SETUP CONFIGURATION" with a close button (X) in the top right corner. The window is divided into several sections:

- LOG-IN**: Contains two input fields. The "NAME" field contains "SAM123" and the "PASSWORD" field contains "*****".
- ENABLE STUDENT TEST**: A toggle switch currently set to "OFF".
- DISPLAY VOLUME CONTROLS**: A toggle switch currently set to "ON".
- DISPLAY SOUND GRAPH**: A toggle switch currently set to "ON".
- ENABLE LECTURE EDITING**: A toggle switch currently set to "ON".
- ENABLE LECTURE ASSIGNING**: A toggle switch currently set to "ON".
- ENABLE CASE EDITING**: A toggle switch currently set to "ON".
- ENABLE CASE ASSIGNING**: A toggle switch currently set to "ON".

At the bottom of the window, there are four buttons: "ACCOUNTS" (grey), "APPLY" (white with a shadow), "CLOSE" (blue), and "LOG-OUT" (blue).

Table 4: Setup Configuration Overview

Name	Function
Name	User name. Can be the top administrative or any subaccount for accessing SAM's configurations. The administrative user name, unless changed, is SAM123. The user name is case sensitive.
Password	Password assigned to the user name logging in. The default administrative password, unless changed, is SAM123. The password is case sensitive.
Enable Student Test	Places the SAM into test mode. Editing and assignment features are turned off. The user must log off to prevent other users from having access to the Setup Configuration window. Only lectures or cases can be tested at one time. A popup will appear when opening the software asking the user to choose between a Case test or Lecture test. To switch tests close the SAM software and reopen to access the popup and select a different test.
Display Volume Controls	Turning this feature off prevents users from altering volume levels. Helpful if faint sounds are desired during a test.
Display Sound Graph	Hides the phonocardiogram found on the Auscultation page.
Enable Lecture Editing	Allows users to create or edit lectures by showing or hiding buttons associated with lecture editing.
Enable Lecture Assigning	Allows users to assign or edit lecture assignments by showing or hiding buttons associated with lecture assigning.
Enable Case Editing	Allows users to create or edit cases by showing or hiding buttons associated with case editing.
Enable Case Assigning	Allows users to assign or edit case assignments by showing or hiding buttons associated with case assigning.
Accounts	Opens a drop down menu to configuring user accounts. Available only to the top

Name	Function
	administrative user logged in. Accounts can be added or edited.
Apply	Activates or implements changes made in the Setup Configuration window.
Close	Closes the Setup Configuration window. Be sure to click Apply to implement changes. Not doing so will ignore any changes and close the window.
Log-Out	Logs the user out of the Setup Configuration access. Helpful when running a test or preventing other users from having access to the Setup Configuration window. User must log out to prevent access to the Setup Configuration window or to switch accounts.

Software Upgrade

There are three features that require keys to activate within the SAM software, Real Sound Library, Echocardiograms, and Patient Case Studies. The licensed status for each feature can be determined by clicking Licensed Features found under Help in the upper-right toolbar. To activate or extend one or more features contact Cardionics for a new key. The following is instructions for installing a new key.

1. Close the SAM software.
2. Locate the license file, SAMIIFeatures.txt, provided by Cardionics.
3. Open Windows file explorer and navigate to the root directory, i.e. C:\
4. Locate the CardionicsSAMIIAttributes folder.
5. Copy the SAMIIFeatures.text into C:\CardionicsSAMIIAttributes folder. Note: Replace the existing file, if any.
6. Launch the SAM software and verify that new features are activated by checking the Licensed Features option found under the Help menu located in the top-right toolbar. A Licensed Features Activation List will pop up showing the status for each feature.

Cleaning

The SAM manikin can be cleaned using a standard alcohol swab or wipe (70% Isopropyl Alcohol). Before cleaning unplug all cables including power from the manikin. Do not use excessive liquid or immerse any part of the SAM manikin. Doing so may result in moisture getting inside the unit.

Transport and Storage

The SAM manikin can be safely stored or transported with the following environmental conditions: -20°C – 65°C (-4°F – 149°F), <95% relative humidity.

Operating Conditions

- Operating Temperature: 32°F - 104°F (0°C - 40°C)
- Humidity: 0 – 95% Relative Humidity
- Altitude: <6,561 Ft. (<2,000 Meters)

Limited Warranty

For questions or in need of service call Cardionics at 281-488-5901. Do not send product back unless instructed by Cardionics.

❖ What this warranty covers

1. Cardionics warrants this product to be free of manufacturing defects in material and workmanship for a period of one (1) year from the date of original consumer purchase from Cardionics or an authorized dealer.
2. This written warranty is limited to the original consumer purchaser, transferable only by written authorization of Cardionics.
3. All warranties, expressed or implied, made by Cardionics, including warranties of merchantability and fitness are limited to the one (1) year period of this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.
4. This warranty is limited to repair of the product or replacement thereof, at the discretion of Cardionics.

❖ What this warranty does not cover

1. This warranty does not cover defects or damage resulting from use of the product other than its normal, intended and customary use. This warranty does not cover defects or damages from abnormal use, abnormal conditions, improper storage, exposure to moisture or liquid, unauthorized modifications, repairs made by unauthorized personnel, unauthorized connections (those not described in this manual), misuse, neglect, abuse, accident, alternation, improper installation or other acts which are not the fault of Cardionics, including damage caused by shipping.
2. Devices which have had the serial number removed or made illegible.
3. Damage resulting from use of non-Cardionics approved accessories.