70-00569-02 G

User Guide

Cardiac Science® Powerheart® G5
Automated External Defibrillator

CARDIAC science®

USER GUIDE

POWERHEART® G5 AUTOMATED EXTERNAL DEFIBRILLATOR

70-00569-02 G

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AT THE HEART OF SAVING LIVES®

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Patents

U.S. and non-U.S. patents pending. See www.cardiacscience.com for a complete list.

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Contents

Chapter 4: AED Features

Chapter 5: Troubleshooting

Chapter 6: Product Care

Appendix A: RescueCoach™ voice and text prompts

Appendix B: Technical Data

Appendix C: ECG Analysis Algorithm and Rescue Waveform

Appendix D: Electromagnetic Emissions Standards Compliance

Appendix E: Waste Electrical and Electronic Equipment (WEEE) Directive Compliance

Appendix F: Limited Warranty

1 About the AED

Contents

This section describes the parts of the AED and its optional features for use in rescues.

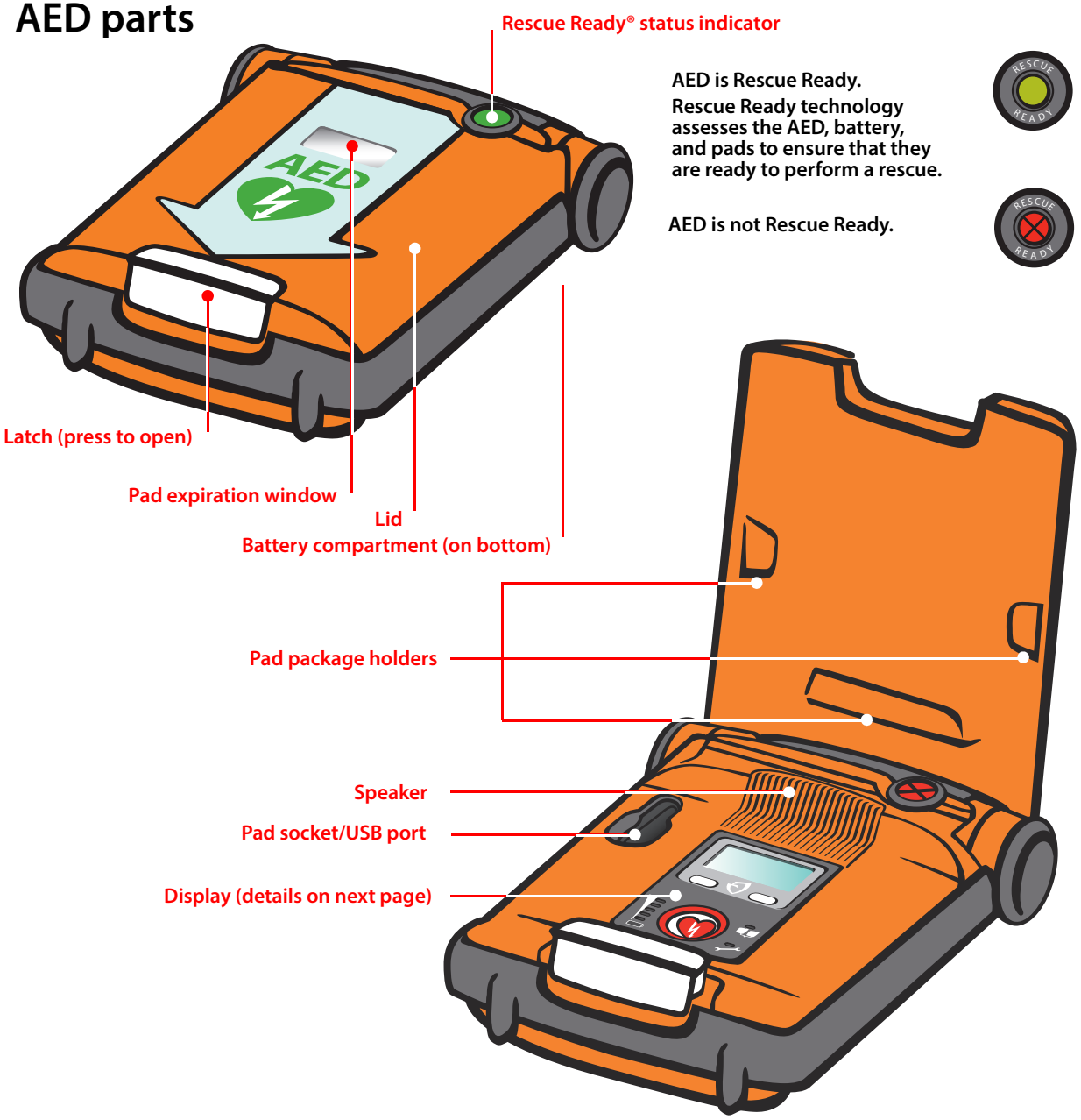
AED overview

The Powerheart G5 automated external defibrillator (AED) is designed for treating life-threatening heart beat irregularities, such as ventricular fibrillation, that cause Sudden Cardiac Arrest (SCA).

There are two models available—fully automatic and semi-automatic. After the defibrillation pads are applied to the patient, the fully automatic model evaluates the heart rhythm and, if a shockable rhythm is detected, delivers a shock without any rescuer assistance. The semi-automatic model evaluates the heart rhythm and requires the rescuer to press the shock button if a shockable rhythm is detected. Both models have voice and text instructions that guide the rescuer through the entire defibrillation process.

Note: Not all of the configurations described in this document are available in all areas.

AED parts

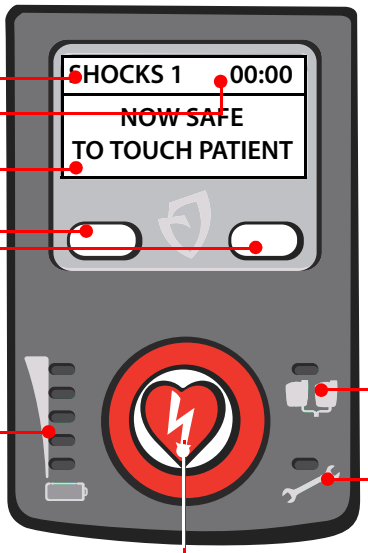

Rescue Ready® status indicator
AED is Rescue Ready.
Rescue Ready technology assesses the AED, battery, and pads to ensure that they are ready to perform a rescue.
AED is not Rescue Ready.
RESCUE READY
RESCUE READY
AED
Latch (press to open)
Pad expiration window
Lid
Battery compartment (on bottom)
Pad package holders
Speaker
Pad socket/USB port
Display (details on next page)

The display panel

Information display
- Number of shocks delivered
- Rescue timer
- Rescue prompts and CPR countdown timer

Function buttons
Press to enter diagnostic mode or to change the prompt language.

Smartgauge™ battery status indicator
The green LEDs display the capacity of the battery. With use, the LEDs turn off as battery capacity decreases. When the green LEDs turn off and the red LED lights up, replace the battery.



Defibrillation pads indicator
Lights up when the pads are:
- improperly connected to the AED
- cold, dried or damaged
- detached from the patient during a rescue

Service indicator
Lights up when the AED detects a need for maintenance or service.

Shock button (semi-automatic model only)
- Lights up in red when the AED is ready to deliver a defibrillation shock.
- Press to deliver therapy to the patient.

Defibrillation pads

The AED comes with defibrillation pads installed. Pads are stored in a ready-to-use, sealed package. Pads are self-adhesive with an attached cable and connector for power and ECG transmission. Pads are disposable: discard after use in a rescue.

The pads have a limited shelf life and should not be used beyond the expiry date. Always keep a fresh, unopened pair of pads plugged into the AED.

The AED can identify the pad type and expiry date. The AED is compatible with these types of pad:

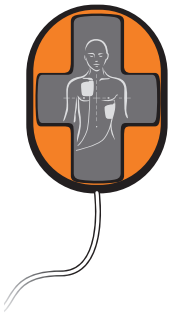
- XELAED001 defibrillation pads
- XELAED002 defibrillation pads with CPR Device
- XELAED003 paediatric defibrillation pads

When the patient is 8 years of age or younger or weighs 25 kg (55 pounds) or less, use the AED with paediatric defibrillation pads, if available. See the instructions for use accompanying paediatric pads to replace preinstalled pads with paediatric pads.
DO NOT delay therapy to determine the patient's exact age or weight.

Contact Cardiac Science Customer Services to order replacement pads.

Important: Paediatric pads are not to be pre-connected to the AED. Follow the instructions for use provided with paediatric pads. See *Warnings and cautions* on page 3-4 for important safety information.

CPR device

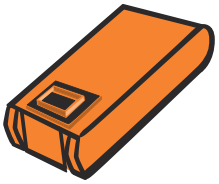


The CPR device is about the size of the palm of your hand. Its non-slip surface and shape transfers the rescuer's compressions to the patient's chest. The CPR device (included with optional Adult defibrillation pads with CPR device) measures the depth and rate of chest compressions. The AED uses this information to help to guide the appropriate compression rate and compression depth during CPR.

Note: Use of the CPR device is optional.
If you do not use the CPR device, place it on a surface next to the patient. DO NOT attempt to detach the device from its cable.

Contact Cardiac Science Customer Services to order the Adult defibrillation pads with CPR device.

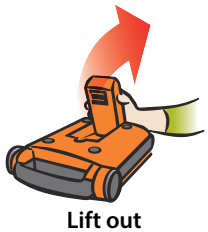
Intellisense® battery



The Intellisense battery (model XBTAED001) automatically stores the history of its operating life. The battery history can be reviewed using the *AED Manager* software.

Important: See *Warnings and cautions* on page 3-4 for important safety information.

How to replace the battery:



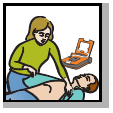
Ensure that the battery is at room temperature before inserting it into the AED.

www.cardiacscience.com/batteryrecycle

2 Steps of a Rescue

These are the general steps involved in performing a rescue:

1: **Assess the patient** (page 2-2)



2: **Prepare the patient** (page 2-2)

3: **Place the defibrillation pads** (page 2-3)

4: **Analyse the patient's ECG** (page 2-4)

5: **Deliver a defibrillation shock** (page 2-5)

6: **Give CPR** (page 2-6)

7: **Prepare the AED for the next rescue** (page 2-7)

1: Assess the patient

Determine whether the patient is more than 8 years of age or weighs more than 25 kg (55 pounds) and is both:

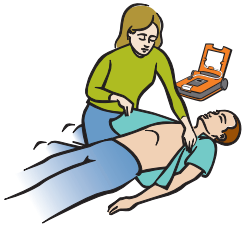
- Unresponsive
- Not breathing or not breathing normally

DO NOT delay therapy to determine the patient's exact age or weight.

CALL EMERGENCY MEDICAL SERVICES!

Note: When the patient is 8 years of age or younger or weighs 25 kg (55 pounds) or less, use the AED with paediatric defibrillation pads, if available. See the directions for use that accompany the paediatric pads to replace adult pads with paediatric pads.

2: Prepare the patient



1. Place the AED next to the patient.

   Note: The normal use for the AED is with it lying horizontally.

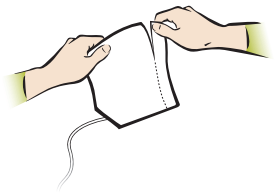
2. Open the AED lid.
3. Remove the clothing from the patient's chest.
4. Ensure that the patient's skin is clean and dry.
5. Dry the patient's chest and shave excessive hair if necessary.

3: Place pads

When the AED prompts…	Do this…
Tear open the white package across the dotted line and remove the pads.	**1.** Keeping the pads connected to the AED, tear open the package. **2.** Remove the pads from the package. You can leave the package attached to the pad wires.
Peel one of the white pads completely from the blue plastic.	**3.** With a firm, steady pull, peel one pad away from the blue plastic liner. You can use either pad.
Firmly place the pad without the blue plastic on the patient's bare chest, exactly as shown on the pads.	**4.** Place the pad in either location on the chest.
Next, peel the second white pad from the blue plastic. Firmly place the second pad on the other location exactly as shown on the pads.	**5.** Pull the blue plastic from the second pad. **6.** Place the pad on the other location on the chest.

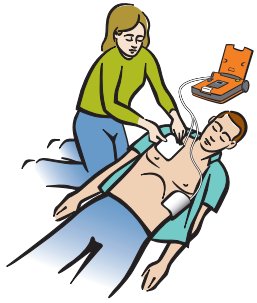
Note: Cardiac Science's standard defibrillation pads are non-polarised and can be placed in either position as shown on the pad package. The package itself can be left attached to the defibrillation pad wires.

1-2



3

4



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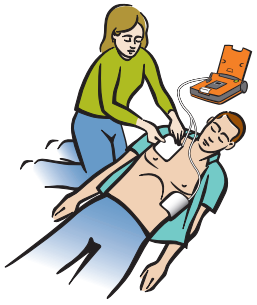


4: Analyse the ECG

When the AED prompts…	Do this…
Do not touch the patient. Analysing heart rhythm. Please wait. The AED begins analysing the cardiac rhythm of the patient.	1. Do not touch the patient. 2. Wait for the next prompt.

During the analysis phase, you may hear one or more of these prompts:

If the AED prompts…	This is the problem…	Do this…
Open lid to continue rescue.	The lid of the AED is closed.	Ensure that the lid is fully open.
Press pads firmly to patient's bare chest.	The pads are not properly placed or are loose.	Ensure that the pads are firmly placed on clean, dry skin.
Make sure pad connector is plugged into AED.	The pads are disconnected from the AED.	Ensure that the connector is plugged properly into the AED.
Analysis interrupted. Stop patient motion. The AED restarts the analysis.	The patient is moving excessively or there is strong electromagnetic emitting equipment nearby (within 2 metres).	Remove the electronic device or stop the excessive motion.

5: Deliver a shock

When the AED prompts…	Do this…
Shock advised. Do not touch the patient.	Ensure that no one is touching the patient.
Automatic model: Shock will be delivered in 3, 2, 1. The AED delivers the defibrillation shock automatically. **Semi-automatic model:** When the AED is ready to deliver a defibrillation shock, the Shock button flashes. Press the red flashing button to deliver shock.	**Automatic model:** Ensure that no one is touching the patient. **Semi-automatic model:** Press the Shock button. If you do not press the Shock button within 30 seconds of hearing the prompt, the AED disarms the charge and prompts you to start CPR.
After the AED delivers the defibrillation shock: Shock delivered.	Wait for the next prompt.
It is now safe to touch the patient. Give CPR as instructed.	Begin CPR.

When the AED is charged, it continues to analyse the patient's heart rhythm. If the rhythm changes and a shock is no longer needed, the AED prompts, “Rhythm changed. Shock cancelled.”

6: Give CPR

After the AED delivers a shock or detects a non-shockable rhythm, it enters CPR mode.

When the AED prompts…	Do this…
If needed, perform CPR as instructed.	Perform CPR according to the prompts. Follow the countdown timer on the text display.

Important: If the AED is not operating as expected, it is preferable to perform CPR without the aid of the AED than to delay providing CPR.

After the CPR time expires, the AED returns to the ECG analysis mode (see *4: Analyse the ECG* on page 2-4).

If the patient is conscious and breathing normally, leave the pads on the patient's chest and connected to the AED. Make the patient as comfortable as possible and wait for emergency medical services (EMS) personnel to arrive.

Note: If the AED does not provide the expected CPR coaching, the rescuer must conduct CPR as appropriate.

7: Prepare the AED for the next rescue

After transferring the patient to the emergency medical personnel, close the lid of the AED. Prepare the AED for the next rescue:

1. Open the lid.

2. Optional: Retrieve the rescue data stored in the internal memory of the AED. See the *AED Manager User's Guide* for details.

3. Connect a new adult pads package to the AED. See the *Defibrillation Pads Instructions for Use* for details.

4. Verify that the pad connection indicator is off. If the indicator is on, make sure that the pad connector is properly attached to the AED.

5. Verify that there is adequate charge (1) remaining in the battery. If the battery charge is low (2), replace the battery.

(1) 

(2) 

6. Verify that the service indicator is off.

7. Close the lid.

8. Verify that the Rescue Ready indicator is green.

3 Safety

Contents

Before operating the AED, ensure that you have become familiar with the various safety alerts in this section.

Safety alerts identify potential hazards using symbols and words to explain what could potentially harm you, the patient, or the AED.

Indications for use

The Powerheart® G5 is indicated for emergency treatment of victims exhibiting symptoms of sudden cardiac arrest who are unresponsive and not breathing or not breathing normally. Post-resuscitation, if the patient is breathing, the AED should be left attached to allow for acquisition and detection of the ECG rhythm. If a shockable ventricular tachyarrhythmia recurs, the device will charge automatically and advise the operator to deliver a shock or, for an automatic AED, automatically deliver a shock if needed.

When the patient is a child up to 8 years of age, or up to 25 kg (55 lbs), the Powerheart G5 AED should be used with Paediatric Defibrillation Pads.

The therapy should not be delayed to determine the patient's exact age or weight.

Safety alert descriptions

The symbols shown below identify potential hazard categories. The definition of each category is as follows:

DANGER

This alert identifies hazards that will cause serious personal injury or death.

WARNING

This alert identifies hazards that may cause serious personal injury or death.

CAUTION

This alert identifies hazards that may cause minor personal injury, product damage or property damage.

Warnings and cautions

This section lists general warnings and cautions.

CAUTION. Read these Instructions for Use carefully

They contain information about your safety and the safety of others. Become familiar with the controls and how to use the AED properly before operating the product.

DANGER! Fire and explosion hazard

To avoid possible fire or explosion hazards, do not operate the AED:

- In the presence of flammable gases
- In the presence of concentrated oxygen
- In a hyperbaric chamber

WARNING! Shock hazard

A defibrillation shock current flowing through unwanted pathways is potentially a serious electrical shock hazard. To avoid this hazard during defibrillation, abide by all of the following instructions:

- Do not use in standing water or rain. Move patient to a dry area
- Do not touch the patient unless the performance of CPR is indicated
- Do not touch metal objects that are in contact with the patient
- Keep defibrillation pads clear of other pads or metal parts in contact with patient
- Disconnect all non-defibrillator proof equipment from the patient before defibrillation

WARNING! Battery is not rechargeable

Do not attempt to recharge the battery. Any attempt to recharge the battery may result in an explosion or fire hazard.

WARNING! Shock hazard

Do not disassemble or modify the AED. Failure to observe this warning can result in personal injury or death. Refer any service issues to Cardiac Science authorised service personnel.

Note: Unauthorised disassembly, modification or service of the AED voids the warranty.

WARNING! Possible radio frequency (RF) susceptibility

RF susceptibility from mobile phones, CB radios, FM 2-way radios, and other wireless devices may cause incorrect rhythm recognition and subsequent shock recommendations. When attempting a rescue using the AED, do not operate wireless radiotelephones within 2 metres of the AED—turn power OFF to the radiotelephone and other similar equipment near the incident.

WARNING! Improper equipment placement

Position the AED away from other equipment in accordance with the information in the electromagnetic compliance tables (see Appendix D, *Electromagnetic Emissions Standards Compliance*). If it is necessary to use the AED adjacent to or stacked with other equipment, observe the AED to verify normal operations.

WARNING! Possible improper delivery of therapy

If it is practical, move the patient to a firm surface before attempting to perform a rescue.

WARNING! Patient injury

Do not place the CPR device on an open wound.

WARNING! Electromagnetic compatibility

Use of accessories or cables other than those specified, with the exception of accessories and cables sold by Cardiac Science Corporation as replacement parts for internal components, may result in increased emissions or decreased immunity of the AED.

WARNING! Possible interference with implanted pacemaker

Therapy should not be delayed for patients with implanted pacemakers and a defibrillation attempt should be made if the patient is unconscious and not breathing or not breathing normally. The AED has pacemaker detection and rejection, however with some pacemakers the AED may not advise a defibrillation shock. (Cummins, R., ed., Advanced Cardiac Life Support; AHA (1994): Ch. 4)

When placing pads:

- Do not place the pads directly over an implanted device.
- Place the pad at least one inch from any implanted device.

WARNING! Do not reuse pads

Used pads may not adhere properly to the patient. Improper pad adhesion may result in skin burns. Improper pad adhesion may result in improper AED performance. Used pads may cause patient-to-patient contamination.

WARNING! The AED may not be rescue ready.

Keep a battery attached to the AED at all times so that the AED is available to perform rescues. In addition, keep a spare battery available.

WARNING! Paediatric pads statement.

Connect paediatric pads only when attempting a paediatric rescue. Upon completion of the rescue, reconnect the adult pads prior to placing the AED back into standby mode.

CAUTION. Restricted use

U. S. Federal law restricts this device to be sold by or on the order of a physician or practitioner licensed by state law in which he/she practises to use or order the use of the device.

CAUTION. Temperature extremes

Exposing the AED to extreme environmental conditions outside its operating parameters may compromise the ability of the AED to function properly.

CAUTION. Battery handling and operation

Pressurised contents: never recharge, short circuit, puncture, deform or expose to temperatures above 65°C (149°F). Remove the battery when it has discharged.

Do not drop the battery.

CAUTION. Battery disposal

Recycle or dispose of the lithium battery in accordance with all national and local laws. To avoid fire and explosion hazards, do not burn or incinerate the battery.

CAUTION. Use only Cardiac Science approved equipment

Using batteries, pads, cables, or optional equipment other than those approved by Cardiac Science may cause the AED to function improperly during a rescue; therefore Cardiac Science does not endorse their use. The use of non-approved accessories, if proved to contribute to a device malfunction, shall void any and all support from Cardiac Science.

CAUTION. Possible improper AED performance

Using pads that are damaged or expired may result in improper AED performance.

CAUTION. Moving the patient during a rescue

During a rescue attempt, excessive jostling or moving of the patient may cause the AED to improperly analyse the patient's cardiac rhythm. Stop all movement or vibration before attempting to perform a rescue.

CAUTION. Case cleaning solutions

When disinfecting the case, use a non-oxidising disinfectant, such as soapy water, denatured ethanol or 91% isopropyl alcohol, to avoid damage to the metal connectors.

CAUTION. Equipment damage.

Keep all cleaning solutions and moisture away from the defibrillation pad connectors and cable connector openings.

CAUTION. Systems statement

Equipment connected to the analogue and digital interfaces must be certified to the respective IEC standards (i.e. IEC 60950 for data processing equipment and IEC 60601-1 for medical equipment).

Furthermore, all configurations must comply with the system standard IEC 60601-1-1. Anybody who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore responsible for ensuring that the system complies with the requirements of the system standard IEC 60601-1-1.

CAUTION. Incorrect software version

The AED is programmed with software that has been tested to work with the version of *AED Manager* software that is included with the AED. When an older version of *AED Manager* is used to communicate with this AED, some features described in this manual may not be available. Also, when communicating with an older AED with the version of *AED Manager* included with this new AED, some features described in this manual may not be able to be used. In most cases, the software will give an error message when incompatibilities occur.

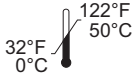
Symbols and labels

The following symbols may appear in this manual, on the AED, or on its accessories. Some of the symbols represent standards and compliances associated with the AED and its use.

Symbol	Description
	Caution. Consult accompanying documentation.
	Additional information is provided in the accompanying documentation.
	Dangerous voltage: The defibrillator output has high voltage and can present a shock hazard. Please read and understand all of the safety alerts in this manual before attempting to operate the AED.
	Defibrillator Proof Type BF Equipment: The AED, when connected to the patient's chest by the pads, can withstand the effects of an externally applied defibrillation shock.
	CE Mark: This equipment conforms to the essential requirements of the Medical Device Directive 93/42/EEC.

Symbol	Description
	Classified by CSA with respect to electric shock, fire and mechanical hazards only in accordance with CAN/CSA C22.2 No.60601-1:08, EN60601-1 and EN60601-2-4. Certified to CAN/CSA Standard C22.2 No. 60601-1:08 and 60601-2-4.
	Authorised representative in the European Community.
IP55	The AED is protected against access to hazardous parts by dust and the effects of water projected by jets in accordance with IEC 60529.
	Battery capacity indicator LEDs show the remaining battery capacity: 100%, 75%, 50%, 25%, 0% (red only).
	Service indicator Indicates that the AED requires service by authorised service personnel.

Symbol	Description
	Defibrillation Pads indicator Indicates that the pads are incorrectly connected or unusable. Check the connection with the AED; check the placement and attachment to the patient. If connections are correct, replace pads.
	Shock button and indicator When the Shock indicator is lit, press this button to deliver a defibrillation shock.
	Rescue Ready® indicator A red indicator means that the AED requires operator attention or maintenance, and is not Rescue Ready.
	Rescue Ready® indicator A green indicator means that the AED is Rescue Ready.
	Manufacturer.
	Date of manufacture, month and year.
	Use the pads by the date shown.

Symbol	Description
	Latex free.
	Disposable. Single patient use only.
	Tear here to open.
	Do not recharge battery.
	Lithium sulphur dioxide.
	For use by or on the order of a doctor or persons licensed by law.
	Do not incinerate or expose to open flame.
	Explosion hazard: Do not use in the presence of a flammable gas, including concentrated oxygen.
	Upper and lower temperature operating range or storage range limits.

Symbol	Description
SN	Serial Number.
REF	Product model number.
LOT	Lot number.
	Dispose of appropriately in accordance with all national and local regulations.
	Recycle cardboard according to local law.
	Waste Electronic Electrical Equipment (WEEE). Separate collection for waste electrical and electronic equipment. For more information, see *Manufacturer's WEEE compliance instructions* on page E-1.
 Pb	Waste Electronic Electrical Equipment (WEEE) containing lead. Separate collection for waste electrical and electronic equipment.
	Box stacking limit.
	Fragile: handle with care.

Symbol	Description
	Keep dry.
	Relative humidity.
	Relative pressure.
	UN symbol: Packaging is manufactured to conform to United Nations requirements.

4 AED Features

Contents

The Powerheart AED provides customisation for aspects of a rescue ranging The Powerheart AED provides customization for aspects of a rescue—from the amount of assistance given to a rescuer to the CPR protocol used.from the amount of assistance given to a rescuer to the CPR protocol used. In addition, each rescue is recorded.

Note: All configuration is performed by a medical director through the *AED Manager* software that is supplied with the AED.

Dual languages

The Powerheart G5 provides the option to choose between two languages in selected models. This allows the user, at any point during the rescue, to change between the two languages. The AED provides all prompts in the chosen language. The prompt language resets to the default when the lid closes.

Prompting levels

The AED provides three selectable levels of prompts.

- Advanced: The AED provides detailed prompts for performing a rescue.
- Standard: The AED provides some guiding prompts.
- Basic: The AED provides minimal prompting for the various stages of a rescue.

Note: The names and descriptions of these prompting levels are provided as suggestions only. Do not construe them as medical guidance. Medical directors must use their professional judgement to determine the appropriate configuration of the AEDs for which they are responsible.

The following table gives an example of the differences in audio prompting provided for the levels of coaching.The following table gives an example of the differences in audio prompting provided for the levels of coaching. See Appendix A, *RescueCoach™ voice and text prompts*, for a complete list of audio and visual prompts.

Table 4-1: Audio prompts for applying pads to a patientAudio prompts for applying pads to a patient

Advanced	Standard	Basic
Firmly place the pad without the blue plastic on the patient's bare chest, exactly as shown on the pads.	Firmly place the pad without the blue plastic on the patient's bare chest, exactly as shown on the pads.	Firmly place the pad on the patient.
This pad can be placed on either of the two locations as shown on the pads.	—	—
Next, peel the second white pad from the blue plastic.	Next, peel the second white pad from the blue plastic.	Next, peel the second white pad from the blue plastic.
Firmly place the second pad on the other location, exactly as shown on the pads.	Firmly place the second pad on the other location, exactly as shown on the pads.	Firmly place the second pad on the other location.

CPR behaviour types

The AED includes optional settings for configuring the style of CPR that is used.

By combining the prompting levels and CPR behaviour types, the AED can be configured in many ways. For example, an AED can be configured to provide rescue instructions with:

- Advanced prompting and traditional (compressions and breaths) CPR sessions (factory default)

  or

- Basic prompting and timed CPR sessions

  or

- Advanced prompting and compressions-only CPR sessions

Rescue Coach prompts vary for all CPR styles depending on the prompting level chosen.

AED device history and rescue data recording

The AED can store up to 90 minutes of data in its internal memory.

When you are downloading data, you can select what data to download. See the *AED Manager User's Guide* for more information.

AED Manager software

With AED Manager software you can:

- Review rescue data and information
- See the current status of the AED and the status of the AED at the time of a rescue
- Archive all data for later review
- Review AED maintenance and diagnostic messages
- Configure settings and rescue protocol

5 Troubleshooting

Contents

This section presents information about AED diagnostics self-tests, troubleshooting of indicator lights, and descriptions of maintenance and diagnostic messages.

Self-tests

The AED has a comprehensive self-test system that automatically assesses the electronics, battery state, defibrillation pads, and high voltage circuitry.

The AED runs automatic self tests at regular time intervals:

- The daily self test checks the battery, pads, and the electronic components.
- The weekly self test completes a partial charge of the high voltage electronics circuitry in addition to the items tested in the daily self test.
- The monthly self test charges the high voltage electronics to full energy in addition to the items tested in the weekly self-test.

Note: If the AED's lid is opened during one of these periodic self tests, testing stops.

A subset of the self tests is also run each time the lid of the AED is closed.

When performing a self test, the AED:

1. Turns the Rescue Ready indicator red.
2. Automatically performs the appropriate self test.
3. Shows the Rescue Ready status.
   - If the test is successful, the Rescue Ready status is green.
   - If the AED detects an error, the Rescue Ready indicator remains red. A beep sounds every 30 seconds.

   Note: When the lid of the AED is opened, one or more indicators on the AED's display panel may remain lit and service messages may appear on the display. To troubleshoot these conditions, see the sections in this chapter.

Troubleshooting indicators

Use this table to troubleshoot the AED if an indicator is lit.

Important: Do not delay calling emergency medical services and delivering CPR even if the AED cannot assist with the rescue.

Indicator	Symptom	Resolution
	The Rescue Ready status indicator is red and the service indicator is NOT lit.	Close and reopen the lid of the AED. The Rescue Ready indicator may return to green. Enter Diagnostic mode for more information (see Diagnostic mode messages on page 5-6).
	Both the Rescue Ready status indicator and the service indicator are red.	The AED requires service by authorised service personnel. Enter Diagnostic mode for more information (see Diagnostic mode messages on page 5-6). Contact Cardiac Science Technical Support or your local representative.
	Pads indicator is lit.	Ensure that the pads are connected securely to the AED. During a rescue, ensure that the pad connector is securely connected to the AED and the pads are placed properly on the patient's chest.
	The battery indicator is red. In addition, when the lid is closed, a beep sounds intermittently.	The battery capacity is low. Replace the battery. If the beep continues to sound after the battery has been replaced, contact Cardiac Science Technical Support or your local representative.

Maintenance and service messages

These messages may appear during a periodic self test or during a rescue at any prompt level. Use the following table to resolve any messages that the AED might display.

Voice prompt	Text display Line 1 Line 2	Situation	Resolution
Battery low.	BATTERY LOW	The battery charge is low, although a rescue can continue for approximately 9 more shocks.	Replace the battery before the next rescue.
	REPLACE BATTERY NOW	Occurs when the lid is opened to perform a rescue and the battery charge is low. The battery charge is too low to support a rescue. In addition, the following events occur: • The Rescue Ready indicator turns red • The AED beeps once every 30 seconds	Replace the battery before continuing with the rescue. If the battery charge is completely depleted, all AED activity ends.
Open lid to continue rescue.	OPEN LID TO CONTINUE RESCUE	The lid is closed during a rescue. The prompt repeats for 15 seconds.	Ensure that the AED's lid is fully open.
Make sure pad connector is plugged into AED.	CHECK CONNECTOR IS PLUGGED INTO AED	The defibrillation pads have become disconnected from the AED.	Ensure that the pads are securely plugged in to the AED. Resume the rescue.

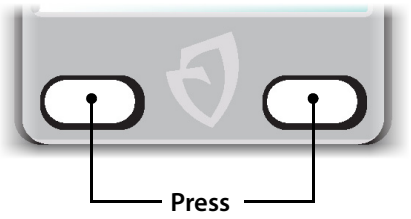
Voice prompt	Text display Line 1 Line 2	Situation	Resolution
Service required. Contact technical support.	SERVICE REQUIRED CONTACT TECH SUPPORT	The AED detects a condition that can prevent the AED from continuing a rescue. For example, this condition may occur after a self test determines that the AED is not functioning properly. This prompt plays when the lid is opened. The red Service indicator illuminates. The prompt repeats until you close the lid. After the lid is closed, an alarm beep sounds until the battery is removed or is depleted.	Contact Cardiac Science Technical Support or your local representative immediately.
Maintenance required. Continue rescue.	MAINTENANCE REQUIRED CONTINUE RESCUE	During a rescue, the AED detects a condition with the defibrillation pads, the internal electronics, or another part of the device. However, the condition has no immediate effect on the ability to continue with a rescue.	Enter Diagnostic mode for more information. If you cannot resolve the issue, contact Cardiac Science Technical support or your local representative.

Diagnostic mode messages

The Diagnostic mode provides details on the maintenance and service conditions of the AED. For example, if the AED is not Rescue Ready, Diagnostic mode displays additional information about the status.

To enter Diagnostic mode:

- Press and hold both buttons on the AED's display panel for three seconds.



The following prompts appear when the AED is in Diagnostic mode. Use the table to resolve the reported conditions.

Voice prompt	Text display Line 1 Line 2	Situation	Resolution
Diagnostic mode.	DIAGNOSTIC MODE	The AED enters Diagnostic mode.	Not applicable
	SERVICE REQUIRED CONTACT TECH SUPPORT	The AED detects a condition that can prevent the AED from continuing a rescue.	Contact Cardiac Science Technical Support or your local representative immediately.
	EXTREMELY LOW BATTERY REPLACE BATTERY	The battery charge is too low to support a rescue.	Replace the battery immediately. If the battery charge is completely depleted, all AED activity ends.

Voice prompt	Text display Line 1 Line 2	Situation	Resolution
	MAINTENANCE REQUIRED CONTACT TECH SUPPORT	The AED detects a condition that has no negative effect on the ability to perform a rescue. The AED can be used to perform a rescue.	Contact Cardiac Science Technical Support or your local representative.
	TEMP TOO HOT ADJUST STORAGE TEMP	The AED is hotter than its permitted storage temperature. While this condition should be remedied as soon as possible, the AED may be used to perform a rescue.	Move the AED to a cooler location.
	TEMP TOO COLD ADJUST STORAGE TEMP	The AED is cooler than its permitted storage temperature. While this condition should be remedied as soon as possible, the AED may be used to perform a rescue.	Move the AED to a warmer location.
	BATTERY LOW CHECK BATTERY	The battery charge is low, although a rescue can continue for approximately 9 more shocks. While this condition should be remedied as soon as possible, the AED can be used to perform a rescue.	Replace the battery before the next rescue.

Voice prompt	Text display Line 1 Line 2	Situation	Resolution
	PADS EXPIRED REPLACE PADS	The AED detects that the connected defibrillation pads are older than their "use by" date. **CAUTION:** Use of pads that are damaged or expired may result in improper AED performance.	Replace the defibrillation pads.
	PADS USED REPLACE PADS	The AED detects that the connected defibrillation pads have already been used in a rescue. **WARNING!** Used pads may not adhere properly to the patient. Improper pad adhesion may result in skin burns. Improper pad adhesion may result in improper AED performance. Used pads may cause patient-to patient contamination.	Replace the defibrillation pads.
	CHECK PADS	The AED detects an issue with the defibrillation pads.	Ensure that the connector is securely plugged into the AED. Replace the pads if necessary.
	NEXT	The AED detects more than one error.	Press the lit button to view the next error.
	CLEAR	The AED displays a TEMP TOO HOT or TEMP TOO COLD error.	Press the lit button to remove the error message from the AED.

6 Product Care

Contents

This section presents information about AED product care and cleaning.

Cardiac Science Corporation provides customer service and technical support.

- To order additional products or accessories, contact Customer Services.
- For assistance with product installation or operation, contact Technical Support. Cardiac Science provides 24-hour support by telephone. You can also contact Technical Support through fax, email, or live web chat.

Customer Services
(800) 426-0337 (USA)
(262) 953-3500 (USA and Canada)
care@cardiacscience.com

Technical Support
(800) 426-0337 (USA)
(262) 953-3500 (USA and Canada)
Fax: (262) 798-5236 (USA and Canada)
techsupport@cardiacscience.com
www.cardiacscience.com

Outside the United States and Canada, please contact your local representative.

Periodical maintenance

Periodically, perform the following tests.

✓ Check the colour of the Rescue Ready® indicator.

If the colour is…	Do this…
Green	No action needed. The AED is ready for a rescue.
Red	Refer to *Troubleshooting indicators* on page 5-3.

✓ Check that the battery has adequate charge to perform a rescue:

1. Open the lid of the AED.
2. If the battery indicator is red, replace the battery.
3. Close the lid.

✓ Check that the voice prompts work and the display is readable:

1. Open the lid of the AED.
2. Listen for the voice prompts.
3. Additionally, check that the display shows text prompts that correspond to the audio.
4. Close the lid. The voice prompts should stop.
5. Verify that the Rescue Ready indicator returns to green.

   If no prompts are heard or they continue after the lid is closed, the display is not readable, or the Rescue Ready indicator remains red, there may be an issue with the AED. Contact Cardiac Science Technical Support, or, outside the U.S., your local representative.

✓ Check that the defibrillation pads are ready for use and that the service beep sounds:

1. Open the lid of the AED.
2. Disconnect the pad connector and remove the pad package.
3. Close the lid.

4. Confirm that the Rescue Ready indicator turns red and the AED beeps at a regular interval. If no sound is heard, contact Cardiac Science Technical Support, or, outside the U.S., your local representative.
5. Check the expiration date of the pads; if expired, replace the package.
6. Check that the pad packaging is not ripped or punctured. Replace the package as needed.
7. Open the lid and confirm that the defibrillation pads indicator is lit.
8. Reconnect the pad connector, put the pads back in the pad holder and close the lid.
9. Make sure that the expiration date is visible through the window of the lid.
10. Make sure that the Rescue Ready indicator is green. If the indicator is red, make sure that the pads are installed properly. If the indicator remains red, contact Cardiac Science Technical Support, or, outside the U.S, your local representative.
11. Close the lid

✓ Check that the LEDs work:

1. Open the lid of the AED.
2. Confirm that the device briefly illuminates all of the indicator LEDs:
   - ✔ 0%, 25%, 50%, 75%, 100% battery LEDs
   - ✔ Pads status LED
   - ✔ Service required LED
   - ✔ Shock button LED
   - ✔ Left function button LED
   - ✔ Right function button LED
3. Close the lid.

✓ Check that the buttons work:

1. Open the lid of the AED.
2. Within 15 seconds of opening the lid, press the soft buttons and then the Shock button in turn. The buttons should light up. If one button does not respond, contact Cardiac Science Technical Support, or, outside the U.S., your local representative.
3. Close the lid.

✓ Check the case of the AED for signs of stress:

If you find any cracks or other signs of stress, contact Cardiac Science Technical Support, or, outside the U.S., your local representative.

Cleaning and care

Use a cloth dampened with an approved cleaning solution to wipe the case. Do not spray or pour the cleaning solution on the case or submerge the AED. Dry the case with a clean cloth.

Approved cleaning solutions

Use one of these solutions to clean the case of the AED: soapy water, denatured ethanol, or 91% isopropyl alcohol.

The AED and its accessories cannot be sterilised.

Authorised service

The AED has no user-serviceable internal components. The user is responsible for changing batteries and defibrillation pads only.

Try to resolve any maintenance issues with the AED by using the information in Chapter 5, *Troubleshooting*. If you are unable to resolve the problem, contact Cardiac Science Technical Support, or, outside the U.S., your local representative.

Return the AED for service if the AED experiences a fall that could cause internal damage.

Note: Unauthorised disassembly, modification or service of the AED voids the warranty.

A RescueCoach™ voice and text prompts

Contents

This section describes the prompts that the AED provides for rescues and maintenance.

RescueCoach™ voice prompts are activated when the AED lid is opened and help to guide the rescuer through a rescue. The AED's information display provides equivalent text to the voice prompts.

These tables list the voice and text prompts, descriptions of when the prompts are used, and the prompt level with which they are used: advanced (Adv), standard (Std), or basic (Bas).

For maintenance and service messages, see *Maintenance and service messages* on page 5-4.

For diagnostic messages, see *Diagnostic mode messages* on page 5-6.

Table A-1: Start up

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Stay calm. Follow these instructions.	STAY CALM FOLLOW INSTRUCTIONS	Plays when the lid is opened.	X		
Make sure 999 is called now!	CALL 999 NOW	Plays when the lid is opened.	X	X	
Make sure emergency services are called now!	CALL EMERGENCY SERVICES NOW	Alternative message. Plays when the lid is opened.	X	X	

Table A-2: Pad placement

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Begin by exposing the patient's bare chest.	BARE PATIENT'S CHEST REMOVE ALL CLOTHING	Prompts the rescuer to remove patient's clothing.	X	X	
Remove or cut clothing if needed.	BARE PATIENT'S CHEST REMOVE ALL CLOTHING	Prompts the rescuer to remove patient's clothing.	X		
When patient's chest is bare, remove the white, square package from the lid of the AED.	WHEN CHEST IS BARE REMOVE PACKAGE	Prompts the rescuer to remove the package of pads from the AED lid.	X		
Remove white square package from the lid of the AED.	REMOVE WHITE SQUARE PACKAGE	Second prompt to remove package of pads from the AED lid.		X	X

Table A-2: Pad placement (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Tear open the white package across the dotted line and remove the pads.	TEAR OPEN PACKAGE REMOVE PADS	Prompts the rescuer to open the package of pads and remove the pads.	X	X	
Peel one of the white pads completely from the blue plastic.	PEEL ONE WHITE PAD FROM BLUE PLASTIC	Prompts the rescuer to remove either pad from the blue plastic. Repeats every 3 seconds until the pads are separated. If a pad has been peeled before the prompt starts, this prompt will be skipped. This prompt will be interrupted when the pad is peeled.	X	X	X
Begin pulling from the tabbed corner.	PULL FROM TABBED CORNER	Prompts the rescuer to remove either pad from the blue plastic. Repeats every 3 seconds until the pads are separated. If a pad has been peeled before the prompt starts, this prompt will be skipped. This prompt will be interrupted when the pad is peeled.	X		
Firmly place the pad without the blue plastic on the patient's bare chest, exactly as shown on the pads.	PRESS PAD FIRMLY TO CHEST AS SHOWN	Prompts the rescuer to place one pad on the patient.	X	X	
Firmly place the pad on the patient.	PRESS PAD FIRMLY TO CHEST	Prompts the rescuer to place one pad on the patient.			X
This pad can be placed on either of the two locations as shown on the pads.	PLACE PAD ON EITHER LOCATION	Prompts the rescuer to place one pad on the patient.	X		
Next, peel second white pad from the blue plastic.	PEEL SECOND PAD FROM BLUE PLASTIC	Prompts the rescuer to remove second pad from the blue plastic.	X	X	X

Table A-2: Pad placement (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Firmly place the second pad on the other location exactly as shown on the pads.	PRESS PAD FIRMLY AS SHOWN	Repeats until second pad placement is sensed. If the pad is placed before the prompt starts, then this prompt will be skipped. This prompt will be interrupted when the second pad is placed.	X	X	
Firmly place the second pad on the other location.	PRESS PAD FIRMLY AS SHOWN	Repeats until second pad placement is sensed. If the pad is placed before the prompt starts, then this prompt will be skipped. This prompt will be interrupted when the second pad is placed.			X

Table A-3: Pad prompts

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Paediatric pads connected.	PAEDIATRIC PADS	Notifies the rescuer that the paediatric pads are connected to the AED.	X	X	X
Make sure pad connector is plugged into AED.	CHECK CONNECTOR IS PLUGGED INTO AED	Prompts when defibrillation pads connector is not inserted into the pad socket.	X	X	X

Table A-3: Pad prompts (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Press pads firmly to patient's bare chest.	PRESS PADS FIRMLY TO CHEST	Prompts when better pad contact to the patient's skin is required.	X	X	X

Table A-4: Analysis

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Do not touch the patient! Analysing heart rhythm. Please wait.	DO NOT TOUCH PATIENT ANALYSING RHYTHM	Repeats until analysis of the patient's cardiac rhythm is completed. This prompt will be interrupted if the AED is ready to shock.	X	X	
Do not touch the patient! Analysing rhythm.	DO NOT TOUCH PATIENT ANALYSING RHYTHM	Repeats until analysis of the patient's cardiac rhythm is completed. This prompt will be interrupted if the AED is ready to shock.			X
Shock advised. Do not touch the patient.	SHOCK ADVISED DO NOT TOUCH PATIENT	Notifies the rescuer that a shockable rhythm has been detected and the AED is preparing to deliver a defibrillation shock (charging).	X	X	X
Shock not advised.	SHOCK NOT ADVISED	Notifies the rescuer when the AED detects a non-shockable rhythm.	X	X	X

Table A-4: Analysis (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Analysis interrupted. Stop patient motion.	ANALYSIS INTERRUPTED STOP PATIENT MOTION	If the AED detects ECG noise artefacts, stop moving or touching the patient. Remove other electronic devices from the vicinity.	X	X	X

Table A-5: Delivering therapy—G5 semi-automatic

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Press the red flashing button to deliver shock.	PRESS BUTTON TO DELIVER SHOCK	Prompts after the AED is fully charged and ready to deliver the defibrillation shock. The red Shock button flashes and the phrase repeats for 30 seconds or until the SHOCK button is pressed.	X	X	X
Shock delivered.	SHOCK DELIVERED	Prompts when the shock is delivered.	X	X	X
Rhythm changed. Shock cancelled.	RHYTHM CHANGED SHOCK CANCELLED	Notifies the rescuer when the AED detects a rhythm change and cancels the shock.	X	X	X

Table A-5: Delivering therapy—G5 semi-automatic (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Shock not delivered.	SHOCK NOT DELIVERED	Plays for either of these situations: • The Shock button is not pressed within 30 seconds of the AED giving the "Press red flashing button…" prompt. • The AED is unable to deliver a shock because of a fault condition.	X	X	X
It is now safe to touch the patient.	NOW SAFE TO TOUCH PATIENT	Advises the rescuer that it is safe to touch the patient: • After the AED delivers a shock • After the AED detects a non-shockable rhythm	X	X	

Table A-6: Delivering therapy—G5 automatic

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Shock will be delivered in	SHOCK IN:	Notifies the rescuer when the AED is fully charged and ready to deliver the shock.	X	X	X
Three	THREE	Prompts approximately three seconds prior to delivering the shock.	X	X	X

Table A-6: Delivering therapy—G5 automatic (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Two	TWO	Prompts approximately two seconds prior to delivering the shock.	X	X	X
One	ONE	Prompts approximately one second prior to delivering the shock.	X	X	X
Shock delivered.	SHOCK DELIVERED	Prompts when the shock is delivered.	X	X	X
Shock not delivered.	SHOCK NOT DELIVERED	Plays if the AED is unable to deliver a shock because of a fault condition.	X	X	X
It is now safe to touch the patient.	NOW SAFE TO TOUCH PATIENT	Advises the rescuer that it is safe to touch the patient: • After the AED delivers a shock • After the AED detects a non-shockable rhythm	X	X	

Table A-7: CPR

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
If needed, perform compressions as instructed.	IF NEEDED GIVE COMPRESSIONS	If the AED detects a non-shockable rhythm, prompts the rescuer to prepare to provide compressions-only CPR.	X	X	
Give compressions as instructed.	GIVE COMPRESSIONS	Prompts the rescuer to prepare to provide compressions-only CPR.	X	X	
If needed, perform CPR as instructed.	IF NEEDED PERFORM CPR	Prompts the rescuer to prepare to provide compressions and breaths CPR.	X	X	
Give CPR as instructed.	GIVE COMPRESSIONS AND BREATHS	Prompts the rescuer to prepare to provide compressions and breaths CPR.	X	X	
Place the heel of one hand on the centre of the chest between nipples.	PLACE ONE HAND ON CENTRE OF CHEST	Prompts the rescuer to put one hand in the correct place for providing compressions.	X	X	
Place the heel of the other hand directly on top of the first hand. Lean over the patient with elbows straight.	PLACE OTHER HAND ELBOWS STRAIGHT	Prompts the rescuer to position the other hand for providing compressions.	X	X	
Press the patient's chest down rapidly, one third the depth of the chest, then release.	PRESS CHEST DOWN FIRMLY	Prompts the rescuer to press down one third of the depth of the patient's chest.	X		
Give patient 30 rapid compressions and 2 breaths.	30 COMPRESSIONS 2 BREATHS	Prompts the rescuer to provide compressions and breaths.	X	X	

Table A-7: CPR (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Start CPR.	START CPR	Prompts the rescuer to start CPR.	X	X	X
Start compressions.	START COMPRESSIONS	Prompts the rescuer to start compressions-only CPR.	X	X	X
"Press" (or) Metronome (or) No prompt (silence)	{CPR countdown timer}	The CPR countdown timer on the display shows the amount of time remaining for a CPR session. The voice prompt or metronome paces the speed of the compressions given by the rescuer.	X	X	
Stop compressions.	STOP COMPRESSIONS	Prompts at the end of each CPR set.	X	X	X
Give breath.	GIVE BREATH	Prompts the rescuer to give a breath to the patient.	X	X	X
Continue with compressions.	CONTINUE WITH COMPRESSIONS	Prompts subsequent sets of the same CPR session.	X	X	X
Stop CPR.	STOP CPR	Prompts the rescuer to stop CPR.	X	X	X
Continue with CPR.	CONTINUE CPR	Prompts the rescuer to continue CPR.	X	X	X

Table A-8: CPR device (optional)

	Text display		Prompt level		
Voice prompt	**Line 1 Line 2**	**Situation**	**Adv**	**Std**	**Bas**
Remove the green square package from the lid of the AED.	REMOVE GREEN SQUARE PACKAGE FROM AED LID	Prompts at the beginning of a CPR session. The green package contains the CPR device.	X	X	
Tear open the green package and remove the CPR device.	TEAR OPEN PACKAGE REMOVE CPR DEVICE	Prompts to remove the CPR device.	X	X	
Place the CPR device on the centre of the patient's chest, between the nipples.	PLACE DEVICE ON CENTRE OF CHEST	Prompts the rescuer to put the CPR device in the correct place for giving compressions.	X	X	
Place the heel of one hand on the CPR device.	PLACE ONE HAND ON CPR DEVICE	Prompts the rescuer to place one hand on the CPR device.	X	X	
Press slower.	PRESS SLOWER	If the rescuer is giving compressions too quickly, prompts them to slow the rate.	X	X	X
Press faster.	PRESS FASTER	If the rescuer is giving compressions too slowly, prompts them to quicken the rate.	X	X	X
Press softer.	PRESS SOFTER	If the rescuer is giving compressions that are too deep, prompts them to reduce the depth.	X	X	X
Press harder and fully release.	PRESS HARDER FULLY RELEASE	If the rescuer is giving compressions that are too shallow, prompts them to use more effort and release all pressure when moving hands up.	X	X	X

Table A-9: Data transfer

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
Communications mode.	COMMUNICATIONS MODE	Played when the AED enters Communications mode.	X	X	X
	DO NOT DISCONNECT USB	Prompts when data is transferred between the AED and the flash drive. Disconnecting the flash drive can corrupt the data that is being transferred.	X	X	X
	SAFE TO REMOVE USB	Prompts after the data transfer has completed. Remove the flash drive.	X	X	X
	UPDATING LANGUAGE	Updating the text and audio prompts as part of a software upgrade using the flash drive.	X	X	X
	VERIFYING LANGUAGE	The AED is verifying that the text and audio prompts in the flash drive are valid or that they are installed properly.	X	X	X
	UPDATING SOFTWARE	Updating the operating software.	X	X	X
	VERIFYING SOFTWARE	The AED is verifying that the operating software is installed properly.	X	X	X
	PROMPT/TEXT UPDATE FAILED	After a language update, the AED has determined that the update was not installed properly. Contact Technical Support or your local representative for help.	X	X	X

Table A-9: Data transfer (continued)

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
	SOFTWARE UPDATE FAILED	After a software update, the AED has determined that the update was not installed properly. Contact Technical Support or your local representative for help.	X	X	X
	UPGRADE ERROR	There is a problem with the software upgrade. Contact Technical Support or your local representative for help.	X	X	X
	CLOSE THE LID	After a data transfer is complete and the flash drive is removed from the AED, re-connect the pads and close the lid of the AED.	X	X	X
	USB DATA ERROR	A problem has occurred with the data transfer. Check the connection with the flash drive and retry the transfer.	X	X	X
	DOWNLOADING DATA	The data transfer to the flash drive is in progress.	X	X	X
	SOFTWARE ERROR	There is a problem with the data transfer to the flash drive. Contact Technical Support or your local representative for help.	X	X	X
	REMOVE USB CLOSE THE LID	The data transfer is complete. It is safe to remove the flash drive, re-connect the defibrillation pads, and close the lid of the AED.	X	X	X
	RESETTING DEVICE	After a software upgrade, the AED restarts itself.	X	X	X
	CONTROL CODE UPDATE	Updating the control software.	X	X	X

Table A-10: Language selection

Voice prompt	Text display Line 1 Line 2	Situation	Prompt level Adv	 Std	 Bas
	ENGLISH	On multi-lingual AED models only: appears above a button on the display panel. Press the button to switch the prompting language (both audio and text) to this language.	X	X	X
	FRENCH	On multi-lingual AED models only: appears above a button on the display panel. Press the button to switch the prompting language (both audio and text) to this language.	X	X	X
	DUTCH	On multi-lingual AED models only: appears above a button on the display panel. Press the button to switch the prompting language (both audio and text) to this language.	X	X	X
	ITALIAN	On multi-lingual AED models only: appears above a button on the display panel. Press the button to switch the prompting language (both audio and text) to this language.	X	X	X
	GERMAN	On multi-lingual AED models only: appears above a button on the display panel. Press the button to switch the prompting language (both audio and text) to this language.	X	X	X

B Technical Data

Contents

This section lists the physical, operating, standby, and storage parameters of the AED, and the physical parameters of the defibrillation pads and AED battery.

Powerheart G5 parameters

Table 1: Physical parameters

Parameter	Details
Operation	Automatic Semi-automatic Multi-language (in specified combinations only)
Dimensions	Height: 9 cm (3.4 in) Width: 23 cm (9.0 in) Depth: 30 cm (11.8 in)
Weight (with battery and pads)	2.6 kg (5.7 lb)

Table 2: Environmental information

Parameter	Details
Operating*	Temperature: 0°C to 50°C (32°F to 122°F) Humidity: 10% to 95% (non-condensing)
Standby**	Short-term (5 days) temperature: 0° C to 50° C (32° F to 122° F) Long-term temperature: 20° C to 30° C (68° F to 86° F) Humidity: 10% to 95% (non-condensing)
Storage and transport*** (up to 3 days)	Temperature: -30°C to 65°C (-22°F to 149°F) Humidity: 10% to 95% (non-condensing)
Altitude	CSA evaluated: -382 m to 3,000 m Minimum: -382 m (approximate; calculated from pressure) Maximum: 4,594 m (approximate; calculated from pressure)
Pressure	CSA evaluated: 700 hPa to 1,060 hPa Minimum: 570 hPa Maximum: 1,060 hPa

*Operating: AED with pads and battery installed and lid open.
**Standby: AED with pads and battery installed and lid closed.
***Storage and transport: AED with pads optionally connected and battery not installed.

Table 3: Functionality

Parameter	Details
RHYTHMx® ECG analysis performance	The AED RHYTHMx ECG Analysis system analyses the patient's ECG and advises you when the AED detects a shockable or non-shockable rhythm. This system makes it possible for a person with no training in the interpretation of ECG rhythms to offer defibrillation therapy to victims of sudden cardiac arrest.
Waveform	STAR® Biphasic
Impedance	25 Ω to 175 Ω
Energy (adult pads)	Escalating energy from 95 J to 354 J
Energy (paediatric pads)	Escalating energy from 22 J to 82 J
Shock times	• Initiation of rhythm analysis to ready to shock: 15 seconds (typical); 45 seconds (maximum) With a fully charged battery • Initiation of rhythm analysis to ready to shock, used battery: 15 seconds (typical); 45 seconds (maximum) With a battery that has been used for 15 shocks • Lid open to ready to shock: 15 seconds (typical) With a battery that has been used for 15 shocks • Post CPR to ready to shock: 10 seconds (typical) With these conditions: "Post CPR" begins after the "Stop CPR" prompt is given; English is the selected language; semi-automatic AED detects persistent VF; new, unused battery is attached to the AED.
Automated self-tests	Daily: Battery, pads, internal electronics, buttons. Weekly (every 7 days): Battery, pads, CPR Device accelerometer, internal electronics, buttons, high voltage circuit (standard tests, partial energy charge cycle). Monthly (every 28 days): Battery under load, pads, CPR Device accelerometer, internal electronics, buttons, high voltage circuit (advanced tests, full energy charge cycle).

Table 3: Functionality (continued)

Parameter	Details
Audible alerts	Voice prompts Maintenance alerts
Indicators	Battery status Check pads Rescue ready Service Text display
USB port communication	Event download, device data, configuration and maintenance
Internal data storage	90 minutes

Table 4: Applicable standards

Type	Details
Cardiac Science AEDs have been designed and manufactured to conform to the highest standards of safety and performance including electromagnetic compatibility (EMC). This AED and defibrillation pads conform to the applicable requirements of the following:	
General	CE Marked by BSI 0086 per the Medical Device Directive 93/42/EEC. CE 0086 Classified by the CSA with respect to electric shock, fire and mechanical hazards only in accordance with CAN/CSA C22.2 No.60601-1:08, EN60601-1 and EN60601-2-4. Certified to CAN/CSA Standard C22.2 No. 60601-1:08. C SA® US

Table 4: Applicable standards (continued)

Type	Details
Safety and performance	IEC 60601-1 IEC 60601-1-2 ANSI/AAMI/IEC 60601-2-4 RTCA DO-160G:2010: Section 5 Category C; Section 4, Category A4 EN 1789
Emissions	EM: EN 55011+A1/CISPR 11, Group 1, Class B
Immunity	EM IEC 61000-4-3, Level X, (20V/m) IEC 60601-2-4 (20V/m) Magnetic IEC 61000-4-8 IEC 61000-4-8 ESD IEC 61000-4-2 IEC 60601-2-4 6 KV contact discharge, 8 KV air gap discharge
Free fall drop	MIL-STD-810G, Method 516.5, Procedure IV
Shock	MIL-STD-810G 516.5, Procedure 1
Vibration (Random)	MIL-STD-810G, Method 514.5, Procedure 1, Category 24; RTCA DO-160D, Section 8, Category S, Zone 2 (curve B) and Category U, Zone 2 (curves F and F1)
Vibration (Sine)	MIL-STD-810G, Method 514.5, Procedure 1, Category 24, Helicopter Minimum Integrity
Enclosure protection	IEC 60529, IP55
Shipping and transportation	ISTA Procedure 2A

Table 4: Applicable standards (continued)

Type	Details
Sensitivity and specificity of Rhythm Detection	Shockable Rhythm—VF: Meets IEC 60601-2-4 requirement and AHA recommendation of Sensitivity of >90%
	Shockable Rhythm—VT: Meets IEC 60601-2-4 requirement and AHA recommendation of Sensitivity of >75%
	Non-shockable Rhythm—NSR: Meets IEC 60601-2-4 requirement (>95%) and AHA recommendation (>99%) of Specificity
	Non-shockable Rhythm—Asystole: Meets IEC 60601-2-4 requirement and AHA recommendation of Specificity of >95%
	Non-shockable Rhythm—all other rhythms: Meets IEC 60601-2-4 requirement and AHA recommendation of Specificity—all other rhythms of >95%

Defibrillation pads

Table 5: Adult defibrillation pads (model XELAED001)

Parameter	Details
Type	Pre-gelled, self-adhesive, disposable, non-polarised (identical pads, which can be placed in either position) defibrillation pads
Applicable age and weight of patient	Older than 8 years or heavier than 25 kg (55 lb)
Shelf life	24 months
Disposal	Check local regulations for disposal information

Table 6: Adult defibrillation pads with CPR Device (model XELAED002)

Parameter	Details
Type	Pre-connected, pre-gelled, self-adhesive, disposable, non-polarised (identical pads, which can be placed in either position) defibrillation pads with CPR device
Applicable age and weight of patient	Older than 8 years or heavier than 25 kg (55 lb)
Shelf life	24 months
Disposal	Check local regulations for disposal information

Table 7: Paediatric defibrillation pads (model XELAED003)

Parameter	Details
Type	Pre-gelled, self-adhesive, disposable, non-polarised (identical pads, which can be placed in either position) defibrillation pads
Applicable age and weight of patient	Eight years or younger or 25 kg (55 lb) or lighter
Shelf life	24 months
Disposal	Check local regulations for disposal information

Intellisense® battery (model XBTAED001)

Table 8: Intellisense battery

Parameter	Details
Type	Intellisense lithium battery, non-rechargeable
Output voltage	12 VDC (nominal)
Lithium content	9.2 g (approximate)
Disposal	Check local regulations for disposal information
Estimated shelf life*	5 years from date of manufacture Temperature ranges: Short term (3 days at either temperature extreme): -30°C to 65°C Long term (5 years at either temperature extreme): 20°C to 30°C
Estimated operating life** (new and fully charged battery)	Shocks (typical): 420, Shocks (minimum): 250 16 hours of operating time at 20-30°C Standby: 4 years

*Shelf life is the length of time for which a battery can be stored prior to installation into an AED without significantly affecting its operating life.

**The battery operating life depends on the type of battery, device settings, actual usage, and environmental factors. The number of shocks is estimated at a 300 VE energy level with a "three shock stack" followed by 60 seconds of CPR using Basic prompt settings between each set of shocks.

C ECG Analysis Algorithm and Rescue Waveform

Contents

This section describes the ECG analysis algorithm and Star Biphasic waveform.

RHYTHMx® AED ECG analysis algorithm

The RHYTHMx AED ECG analysis algorithm provides extensive ECG detection capabilities.

- All ventricular fibrillations (VF) are classified as shockable.
- Asystole is separated primarily by amplitude. ECG rhythms of low amplitude are classified as asystole and are not shockable.
- The AED detects noise artefacts in the ECG form generated from, for example, movement of the patient, adjustment of the defibrillation pads, or electronic noise from external sources. The analysis is delayed or aborted in these cases.
- The AED can detect or reject pulses from an implanted pacemaker.

In addition, RHYTHMx optionally shocks selected VT and SVT rhythms. Settings for several detection features can be adjusted through the AED Manager software:

- Detection rate: All ventricular tachycardia (VT) rhythms at or above this rate are classified as shockable. All rhythms below this rate are classified as non-shockable.
- Non-committed shock: If the patient's rhythm changes to a non-shockable rhythm before the actual shock is delivered, the AED cancels the shock.
- Synchronised shock: The AED automatically attempts to synchronise shock delivery on the R-wave if one is present. If delivery cannot be synchronised within one second, a non-synchronised shock is delivered.
- SVTdiscriminator: The AED is configurable to shock SVT waveforms that are above a threshold rate that can be pre-set, or can be disabled (default setting).

Rescue protocol

The AED rescue protocol is consistent with the guidelines recommended by the AHA/ERC 2010 Guidelines for Resuscitation and Emergency Cardiac Care.

Note: For consistency with the AHA/ERC guidelines, the CPR time can be set to allow for 5 cycles of 30 compressions and 2 breaths.

Use the AED Manager to change the protocol. For details, see the *AED Manager User's Guide*.

STAR® biphasic waveform

The waveform generated by the Cardiac Science AED is a biphasic truncated exponential waveform. The waveform complies with the IEC 60601-2-4 standard. Figure 1 is a graph of the waveform voltage as a function of time when the AED is connected to a 50 ohm resistive load using adult defibrillation pads.

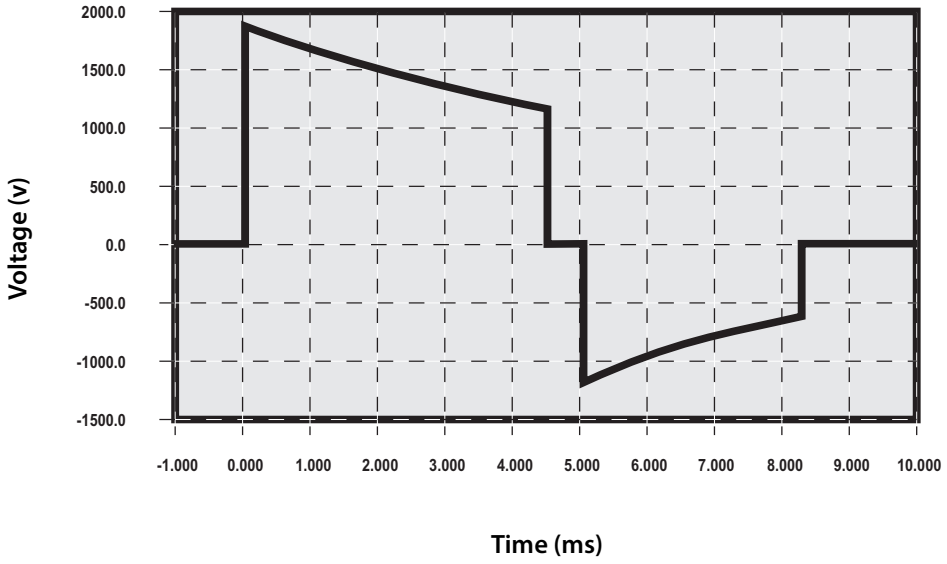


Figure 1: **High variable energy waveform with 50 ohm resistive load**

Patient impedance

The Cardiac Science Biphasic Truncated Exponential (BTE) waveform uses variable energy. The actual energy that is delivered varies with the patient's impedance. The device delivers a shock to a patient with an impedance in the range of 25-175 ohms. Energy is delivered at up to three different levels: ultra-low variable energy, low variable energy and high variable energy (see the waveform and energy tables on the following pages).

Waveform and energy levels for adult defibrillation pads

Table C-1: Ultra-low variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	1,412	3.25	743	3.2	146-197
50	1,426	4.50	907	3.2	128-172
75	1,431	5.75	968	3.2	116-156
100	1,433	7.00	1,000	3.2	108-144
125	1,435	8.25	1,019	3.2	102-136
150	1,436	9.50	1,031	3.2	97-130
175	1,437	10.75	1,038	3.2	94-126

Table C-2: Low variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	1,631	3.25	858	3.2	195-263
50	1,647	4.50	1,047	3.2	170-230
75	1,653	5.75	1,118	3.2	154-208
100	1,655	7.00	1,155	3.2	143-193
125	1,657	8.25	1,176	3.2	135-182
150	1,658	9.50	1,190	3.2	129-174
175	1,659	10.75	1,199	3.2	125-168

Table C-3: High variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	1,895	3.25	997	3.2	263-355
50	1,914	4.50	1,216	3.2	230-310
75	1,920	5.75	1,299	3.2	208-280
100	1,923	7.00	1,342	3.2	193-260
125	1,925	8.25	1,367	3.2	183-246
150	1,926	9.50	1,383	3.2	174-235
175	1,927	10.75	1,393	3.2	168-226

Waveform and energy levels for paediatric defibrillation pads

Table C-4: Ultra-low variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	682	3.25	359	3.2	35-46
50	689	4.50	438	3.2	30-40
75	691	5.75	468	3.2	27-36
100	692	7.00	483	3.2	25-33
125	693	8.25	493	3.2	24-31
150	694	9.50	498	3.2	23-30
175	694	10.75	802	3.2	22-29

Table C-5: Low variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	791	3.25	416	3.2	46-61
50	798	4.50	508	3.2	40-54
75	801	5.75	542	3.2	37-48
100	802	7.00	560	3.2	34-45
125	803	8.25	570	3.2	32-42
150	804	9.50	577	3.2	31-40
175	804	10.75	581	3.2	30-39

Table C-6: High variable energy waveform (all values are typical)

	Phase 1		Phase 2		
Patient's Impedance (Ohms)	**Voltage (Volts)**	**Duration (ms)**	**Voltage (Volts)**	**Duration (ms)**	**Energy (Joules)**
25	915	3.25	481	3.2	62-82
50	924	4.50	588	3.2	54-72
75	927	5.75	628	3.2	49-65
100	929	7.00	648	3.2	46-60
125	930	8.25	660	3.2	43-57
150	931	9.50	668	3.2	41-54
175	931	10.75	673	3.2	40-52

D Electromagnetic Emissions Standards Compliance

Contents

Guidance and manufacturer's declaration—electromagnetic emissions

The AED is intended for use in the electromagnetic environment specified below. The customer or the user of the AED should ensure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment—guidance
RF emissions CISPR 11	Group 1	The AED uses RF energy only for its internal functions. Therefore its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The AED is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Not applicable	

Guidance and manufacturer's declaration—electromagnetic immunity

The AED is intended for use in the electromagnetic environment specified below. The customer or the user of the AED should ensure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment—guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	Not applicable	
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	Not applicable	

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment—guidance
Voltage dips, short interruptions and voltage variations on power supply input lines 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec.	Not applicable	
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	80 A/m	Power frequency magnetic fields should be at levels no higher than those characteristic of a typical location in typical heavy industrial and power plants and the control rooms of H.V. sub-stations.
Note: U_T is the a.c. mains voltage prior to application of the test level.			
Conducted RF	3 Vrms	Not Applicable	
IEC 61000-4-6	150 kHz to 80 MHz outside ISM bands[a] 10 Vrms 150 kHz to 80 MHz in ISM bands[a]	Not Applicable	

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment—guidance
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.5 GHz	10 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the AED, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m)[b]. Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[c] should be less than the compliance level in each frequency range.[d] Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are: 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 to 40.70 MHz.

b The compliance levels in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2.5 GHz are intended to decrease the likelihood that mobile/ portable communications equipment could cause interference if it is inadvertently brought into patient areas. For this reason, an additional factor of 10/3 is used in calculating the recommended separation distance for transmitters in these frequency ranges.

c Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast, cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the AED is used exceeds the applicable RF compliance level above, the AED should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orientating or relocating the AED.

d Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 1 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the AED

The AED is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the AED can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the AED as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m			
	150 kHz to 80 MHz outside ISM bands $d = 1.2\sqrt{P}$	150 kHz to 80 MHz in ISM bands $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.12	0.23
0.1	0.38	0.38	0.38	0.73
1	1.2	1.2	1.2	2.3
10	3.8	3.8	3.8	7.3
100	12	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are: 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 to 40.70 MHz.

NOTE 3 An additional factor of 10/3 is used in calculating the recommended separation distance for transmitters in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2.5 GHz to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas.

NOTE 4 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

E Waste Electrical and Electronic Equipment (WEEE) Directive Compliance

Contents

Manufacturer's WEEE compliance instructions

Pursuant to European Community Directive 2002/96/EC (effective: February 2003), Cardiac Science Corporation is committed to minimising the disposal of WEEE as unsorted municipal waste.

European Community-based Users of the WEEE medical device contained herein are instructed to contact the following approved service provider for the complimentary / gratis collection and disposal of the subject equipment at the end of its useful life:

WasteCare
Richmond House
Garforth, Leeds
LS25 1NB
Tel: 0800 800 2044
Fax: 01133 854 322
Email: admon@weecare.com

F Limited Warranty

Cardiac Science Corporation (“Cardiac Science”) warrants to the original purchaser that its AEDs and stated battery operating life will be free of any defect in material and workmanship according to the terms and conditions of this Limited Warranty (“Limited Warranty”). For purposes of this Limited Warranty, the original purchaser is deemed to be the original end user of the product purchased. This Limited Warranty is NON-TRANSFERABLE and UNASSIGNABLE.

For how long?

This Limited Warranty covers the following products or parts for the following time periods:

- Seven (7) years from the date of the original shipment to the original purchaser for Powerheart AED automated external defibrillators. Warranty duration for the pads, batteries and accessories are covered below.
- Disposable defibrillation pads shall be warranted until the expiry date.
- Lithium batteries (part number: XBTAED001) have a full operational replacement guarantee of four (4) years from the date of installation into a Powerheart AED.
- One (1) year from the date of original shipment to the original purchaser for Powerheart AED accessories. The terms of the Limited Warranty in effect as of the date of original purchase will apply to any warranty claims.

What you must do:

Please complete and submit the Product Registration online at http://www.cardiacscience.com/services-support/product-registration/.

To obtain warranty service for your product:

Inside the US, call us freephone on 800.426.0337 seven days a week, 24 hours a day. Our technical support representative will try to resolve your issue over the phone. If necessary, and at our sole discretion, we will arrange for service or a replacement of our product.

Outside the US, contact your local Cardiac Science representative.

What we will do:

If your Cardiac Science product is returned within 30 days of the date it was purchased, at the direction of a technical support representative, we will repair or replace it with a new product of equal value at no charge to you or offer a full refund of the purchase price, provided the warranty applies. Cardiac Science retains the exclusive right to repair or replace the product or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

If your Cardiac Science product is returned, at the direction of a technical support representative, after 30 days but within the warranty period, Cardiac Science, at its sole discretion, will repair your product or replace it. The repaired or replacement product will be warranted subject to the terms and conditions of this Limited Warranty for either (a) 90 days or (b) the remainder of the original warranty period, whichever is longer, provided the warranty applies and the warranty period has not expired.

Obligations and warranty limits:

Limited Warranty Obligation: Exclusive Remedy

THE FOREGOING LIMITED WARRANTY IS IN LIEU OF AND SPECIFICALLY EXCLUDES AND REPLACES ALL OTHER EXPRESSED OR IMPLIED WARRANTIES INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

NO PERSON (INCLUDING ANY AGENT, DEALER OR REPRESENTATIVE OF CARDIAC SCIENCE) IS AUTHORISED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING CARDIAC SCIENCE PRODUCTS, EXCEPT TO REFER PURCHASERS TO THIS LIMITED WARRANTY.

YOUR EXCLUSIVE REMEDY WITH RESPECT TO ANY AND ALL LOSSES OR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE AS SPECIFIED ABOVE. CARDIAC SCIENCE SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, PUNITIVE, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, EXEMPLARY DAMAGES, COMMERCIAL

LOSS FROM ANY CAUSE, BUSINESS INTERRUPTION OF ANY NATURE, LOSS OF PROFITS OR PERSONAL INJURY OR DEATH, EVEN IF CARDIAC SCIENCE HAS BEEN ADVISED OF THE POSSIBILITIES OF SUCH DAMAGES, HOWEVER OCCASIONED, WHETHER BY NEGLIGENCE OR OTHERWISE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

What this warranty does not cover:

This Limited Warranty does not cover defects or damages of any sort resulting from, but not limited to, accidents, damage while in transit to our service location, product tampering, unauthorised product alterations, unauthorised service, unauthorised product case opening, failure to follow instructions, improper use, abuse, neglect, fire, flood, war or acts of God. Cardiac Science makes no warranty claim as to the compatibility of Cardiac Science products with any non-Cardiac Science products, parts or accessories.

This Limited warranty is void if:

1. Any Cardiac Science product is serviced or repaired by any person or entity other than Cardiac Science unless specifically authorised by Cardiac Science.
2. Any Cardiac Science product case is opened by unauthorised personnel or if a product is used for an unauthorised purpose.
3. Any Cardiac Science product is used in conjunction with incompatible products, parts or accessories, including but not limited to batteries. Products, parts and accessories are not compatible if they are not Cardiac Science products intended for use with the Powerheart AED.

If the warranty period has expired:

If your Cardiac Science product is not covered by our Limited Warranty:

Inside the US, call us freephone at 888.466.8686 for advice as to whether we can repair your Powerheart AED and for other repair information, including charges. Charges for non-warranty repairs will be assessed and are your responsibility. Upon completion of the repair, the terms and conditions of this Limited Warranty shall apply to such repair or replacement product for a period of 90 days.

Outside the US, contact your local Cardiac Science representative.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

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