Bid Specifications

Automated External Defibrillator (AED)
LIFEPAK® CR2 USB defibrillator

Defibrillator	
In package	• The LIFEPAK CR2 USB defibrillator is supplied with pre-connected four-year electrodes, operating instructions, battery, handle, USB cable and a LIFELINKcentral™ AED Program Manager Basic account at no extra charge. The Basic account includes readiness and use notification, free software updates and basic customer support.
Waveform	• Biphasic Truncated Exponential waveform with voltage and duration compensation for patient impedance.
Patient impedance range	• 10 - 300 ohms
Output energy accuracy	• Output energy from the device is 10% of the energy setting into a 50Ω load, and 15% of the rated energy output into a 25Ω to 175Ω load.
Output limit	• 360J into a 50Ω load.
Energy settings	• Four energy levels, user-configurable from 150J to 360J for adults and from 35J to 90J for children. Device can be delivered with customer's preferred energy sequence. • Factory default settings are 200J, 300J, 360J for Adult Mode, and 50J, 75J, 90J for Child Mode.
Shock Advisory System™ Technology	• Analyzes ECG waveform and determines if the rhythm is shockable. Motion detection (which is a setup option) is active during SAS analysis and may delay the analysis up to 10 seconds.
Time to shock	• At 360J after CPR (semi-automatic): < 17 seconds.
Charge time	• 0 seconds for first shock of either 150J or 200J as the device is pre-charged. Subsequent shocks will be charged during CPR.
cprCOACH™ Feedback Technology (CPR Coaching)	• The LIFEPAK CR2 USB provides CPR coaching on CPR technique and correct depth for adult and pediatric patients at appropriate times during the cardiac arrest response. A metronome provides tones at 104 beats per minute (bpm) to guide the responder; this complies with the 2015 ERC Guidelines to provide 100-120 chest compressions per minute. The LIFEPAK CR2 USB also detects whether chest compressions are being performed and adjusts the voice prompts, if needed, to help the responder resume CPR and provide the best possible care. • An internal study shows that the CPR technology in the LIFEPAK CR2 USB drove users to achieve guideline-compliant rate and depth of compression. (Physio-Control Internal Semi-Automatic AED Comparison Usability Study, August 2016)
Breathing prompts	• If configured in the setup options, the LIFEPAK CR2 USB provides the voice prompt "Check for Breathing" for patient assessment. (On Norwegian devices, this prompt is "Check for Signs of Life".) • **Note:** "Check for Pulse" and "Check for Signs of Circulation" are not in the prompt list.
Energy protocol	• The LIFEPAK CR2 USB can be set to Flexible Energy (energy does not increase if first analysis after previous shock resulted in a no shock decision) or Fixed Energy (energy escalates from first to second to third values regardless of the post shock ECG) protocol.

Device setup	• Configurable at factory at the time of order according to customer preference and medical protocols.
Warranty	• The LIFEPAK CR2 USB is backed by an 8-year warranty.
Guideline recommendations	• The LIFEPAK CR2 USB follows the recommendations in the 2015 AED guidelines for the American Heart Association (AHA), the European Resuscitation Council (ERC) and the International Liaison Committee on Resuscitation (ILCOR). • The LIFEPAK CR2 USB is consistent with current guidelines for CPR (energy protocols, CPR protocols, quality assurance).
Operation	
Semi-auto vs. Fully auto	• The LIFEPAK CR2 USB can be ordered as semi-automatic device (shock button press needed to deliver a shock) or fully automatic device (delivers a shock automatically, when appropriate).
On/Off	• The device powers on when the lid is opened or when the ON/OFF button is pressed.
Manual override	• Manual override is not available on the LIFEPAK CR2 USB.
Intended use	• The LIFEPAK CR2 USB is intended for use by lay persons who have been trained in CPR and may have been trained in the use of an AED. • The device is also effective for emergency responders wanting to use energy settings up to 360 joules.
Voice prompts	• The LIFEPAK CR2 USB guides the operator through operating procedures with a combination of voice prompts, flashing LEDs, and visual prompts.
Electrode placement	• The LIFEPAK CR2 USB provides visual prompts (pictures) for placement of the QUIK-STEP™ side-by-side electrodes. • The LIFEPAK CR2 USB has color-coded electrodes which also help with relative pad placement as shown on the pictures. • The LIFEPAK CR2 USB electrodes can be placed on either side of the chest.
CPR prompts	• The LIFEPAK CR2 USB prompts the operator to perform CPR for a defined time period, which can be preconfigured to 60, 120 or 180 seconds.
Child mode (pediatric button)	• Upon power on, the LIFEPAK CR2 USB defaults to the energy delivery and CPR guidance set for an adult patient. • When the device operator pushes the Child Mode button, the device will provide the energy delivery and CPR guidance set for a pediatric patient.
Pediatric attenuator	• A pediatric attenuator is not required. When the operator pushes the Child Mode button, the device will provide the energy delivery and CPR guidance set for a pediatric patient. The same electrodes are used for both adult and pediatric patients.
Electrodes	• Immediately after the lid is opened to turn on the device, an integrated easy-to-open electrode pack is the only item visible (for less operator confusion). After the rapid-release electrode pack is opened by pulling the visible red handle, QUIK-STEP™ side-by-side electrodes will be visible for intuitive placement to patient chest.
Adaptive volume control	• Automatically adjusts the volume of the voice prompts in accordance with the background noise for clear instruction.
ClearVoice™ Technology	• Processing technology, based on acoustic research, that enables prompts to be heard more clearly in noisy environments.

Real-Time clock	• The LIFEPAK CR2 USB has a real-time clock that reads the time from the battery, which uses Coordinated Universal Time (UTC).
Readiness indicator	• The Readiness indicator is a bright green LED that flashes every six seconds to indicate the LIFEPAK CR2 USB is ready for use. If the LIFEPAK CR2 USB has detected an issue affecting readiness, the Readiness indicator will stop flashing and a loud alert tone will sound every 15 minutes.
Low battery indication	• When the battery needs to be replaced, the LIFEPAK CR2 USB provides an audible alert every 15 minutes and the Readiness Indicator will not flash. In Data Mode, the LIFEPAK CR2 USB will provide a voice prompt that identifies the specific readiness issue. The LIFEPAK CR2 USB can still deliver at least six shocks and provide 30 minutes of operating time when this indication is first heard or seen. This process preserves the battery by not having to turn on the device to check the battery.
Self-test (self-check)	• The LIFEPAK CR2 USB runs a self-test each time the device is turned on, and daily, weekly and monthly automated self-tests at designated times. If an automatic self-test detects a condition that requires attention, this negative result of the self-test is indicated by visible and audible indicators on the device. Information on the negative result can be found by opening the lid of the device and pressing the LANGUAGE and CHILD MODE buttons simultaneously. Actions that may need to be performed are provided and can be as follows: – Replace electrode tray (if missing or expired) – Replace battery (if low or expired) – Contact qualified service personnel
Physical specifications	
Handle/case	• Each device is shipped with a handle. An optional carrying case is available.
Dimensions (with handle, including electrodes and battery)	• 9.7 cm (3.8 in) depth, 22.6 cm (8.9 in) width, and 27.4 cm (10.8 in) height.
Display	• Designed for user confidence, the LIFEPAK CR2 USB uses simple bold graphics, audible instructions and automated features to help users remain focused. A display could be a distraction that takes away the responder's attention from the patient. • In addition, for use in loud environments, the voice prompts on the LIFEPAK CR2 USB are processed with proprietary ClearVoice technology, which uses very specific frequencies to enable the human ear to distinguish between background noises. And the LIFEPAK CR2 USB has an automated volume adjustment feature that increases or decreases the volume of the prompts based on the noise level of the environment.
Integrated lid	• Provides protection for the electrode pack and controls.
Weight of device (without case or handle)	• 2.0 kg (4.5 lbs) including the battery and one set of electrodes.
Port	• USB
Communications	• USB

Shock Advisory System

ECG analysis	• The LIFEPAK CR2 USB completes the Shock Advisory System (SAS) analysis cycle in 9 seconds or less. The analysis is performed on both adult and pediatric patients.

Motion detection	• The LIFEPAK CR2 USB detects motion during SAS analysis. When motion is detected, the device stops analysis, provides an audible notification to the operator that motion is detected, and resumes analysis after 10 seconds or when the motion subsides.
	• The device identifies ventricular tachycardia based, in part, on the following criteria:
	  – Minimum heart rate greater than 120 beats per minute
	  – No apparent P waves
	  – QRS widths with a duration greater than 160 milliseconds
	  – No pulse

Overall sensitivity	• For VF or shockable VT in excess of 95%.
Overall specificity	• For all non-shockable rhythms in excess of 95%.

Environmental

Operating temperature range	• 0 to 50°C (32° to +122°F)
Storage temperature range	• -30° to +60°C (-22° to +140°F) with electrodes and battery installed, maximum exposure is limited to one week.
Long term storage temperature range	• The defibrillator should be stored within the recommended temperature range of 15° to 25°C (59° to 77°F).
Relative humidity	• 5 to 95% (non-condensing)
Atmospheric pressure (altitude)	• -382 to 4,572 meters, (-1,253 to 15,000 feet)
Water resistance	• Meets IEC 60529/EN 60529 IPX5 with electrodes connected and battery installed.
Dust resistance	• Meets IEC 60529/EN 60529 IP5X with electrodes connected, and battery installed.
Shock	• IEC 60068-2-27 (40g, 11 ms pulse, ½ sine each axis)
Vibration	• MIL-STD-810G, Method 514.6, Helicopter–category 14 and Ground Vehicle–category 20
Drop test	• 1 meter/3.3 feet with case

Event documentation

Memory type	• Internal digital memory (flash RAM).
ECG storage	• The LIFEPAK CR2 USB can store 60 minutes of ECG for two patient episodes in internal memory (i.e. without the use of external storage media). **Note:** Patient event storage is not affected if power is disconnected from the device.
Data retrieval	• Transfer with USB cable to a PC: The device transfers patient (Event Log data, ECG and impedance waveforms) and test log.
Report software	• DT EXPRESS™ Data Transfer Software allows for downloading, editing of patients' demographics and printing of event data and Test Log.

Batteries	
Type	• Non-rechargeable, removable Lithium Manganese Dioxide (Li/MnO2) battery.
Amp-hours	• 12V, 4.7Ah
Capacity	• A fully charged battery typically provides 166 200 joules shocks (with one minute between shocks) or 103 360 joules shocks (with one minute between shocks) or 800 minutes of operating time.
Standby life (assuming only daily tests)	• New battery provides device power for four years, including the monthly Wi-Fi check-in. • Low Battery Indication: At least 6 shocks and 30 minutes of operating time remain when first indicated.
Weight	• 0.3 kg (0.7 lb)
Replacement cycle	• Battery should be replaced every four years if the device has not been used.
Electrodes	
Performance	• QUIK-STEP™ Pacing/ECG/Defibrillation user intuitive, rapid access electrodes are designed to be quick and easy to open, reducing the amount of time that passes before a defibrillation shock can be provided.
Adult / pediatric	• Electrodes can be used on both adult and pediatric patients.
Operation	• Electrodes are stored in a protective package that is installed in the device. As soon as the device is opened, the user simply uses one hand to pull the red handle to reveal the electrodes, which are placed side-by-side on a tray. The user then uses the loop on each electrode to easily peel the electrodes from the tray. The picture on each electrode indicates where it should be placed on the patient's chest.
Compatibility	• Electrodes are compatible with the QUIK-COMBO™ electrode connection system on LIFEPAK devices, if used by local advanced life support responders, without requiring purchase of a connectivity solution.
Replacement cycle	• Electrodes must be replaced every 4 years if not used.
Electrode cable length	• 1.1 meters (41.8 inches)
Accessories	
Defibrillator accessories	• Several accessories are available for day-to-day operation of the LIFEPAK CR2 USB. These accessories include the following: – QUIK-STEP pacing/ECG/defibrillation electrodes – LIFEPAK CR2 USB lithium battery – LIFEPAK CR2 USB carrying case – Replacement lid – Replacement handle – Replacement USB cable – Ambu® Res-Cue Mask® First Responder kit – Wall bracket – Rotaid™ Plus wall cabinet with alarm – Rotaid Solid Plus wall cabinet with alarm – Rotaid Solid Plus wall cabinet with heat and alarm – LIFEPAK CR2 USB AED surface mount cabinet with alarm

Trainer/ trainer accessories	• LIFEPAK CR2 USB Trainer • LIFEPAK CR2 USB Trainer carry bag • LIFEPAK CR2 USB Trainer replacement lid • LIFEPAK CR2 USB Trainer handle • LIFEPAK CR2 USB Trainer replacement Bluetooth USB • LIFEPAK CR2 USB Trainer replacement battery compartment cover • Replacement D-cell batteries

Trainer	
Descriptions	• The LIFEPAK CR2 USB AED Training System provides realistic training in the use of the LIFEPAK CR2 USB defibrillator without the actual charge and discharge of electrical energy. Designed to simulate the appearance of the LIFEPAK CR2 USB, the LIFEPAK CR2 USB Trainer simulates its actual operation using the same simple user interface. • The LIFEPAK CR2 USB Trainer is compatible with any CPR manikin system.
Labeling	• Includes clear labeling that it is a training unit, and a different color (gray) carrying bag.
Dimensions (with handle)	• 27.2 cm (10.7 in) height, 21.8 cm (8.6 in) width, and 8.6 cm (3.4 in) depth.
Weight (with batteries)	• 1.8 kg (3.9 lb)
Buttons	• Power, Child Mode, Shock
Simulation	• All of the functions of the Trainer are programmable to simulate the full range of scenarios users might encounter during "real life" use of the LIFEPAK CR2 USB defibrillator. The Trainer provides two fully configurable scenarios that are completely customized using a setup screen and can be updated on the go for maximum flexibility. • Pre-set demos can be programmed for fully automatic or semi-automatic mode to enable a quick demonstration of the key LIFEPAK CR2 USB features.
Adaptive volume control/ ClearVoice Technology	• Adaptive Volume Control to automatically adjust the volume of the voice prompts in accordance with the background noise for clear instruction, and ClearVoice Technology that enables prompts to be heard more clearly in noisy environments.
Training electrodes	• The training electrodes are reusable; capable of at least 50 applications to a CPR manikin system.
Batteries	• The Trainer uses four non-chargeable D-cell alkaline batteries, which can be purchased in normal retail outlets. New batteries will provide no less than 100 hours of continuous operation at volume 4.
On-Line training	• On-line AED training is available to provide instructions on operating the device.