ATTENTION: Instramed assumes no responsibility for any damage caused to individuals or property brought by failure to use this product in accordance with the information, recommendations and warnings presented in the user manual, alterations made in the device, attempts of repair not provided by authorized technical assistance centers, operation by unqualified personnel, use of defective device or use of accessories and parts not supplied by the manufacturer.

For information about warranty or technical assistance, please contact Instramed’s technical support.

Copyright © 2017 Instramed. The CardioMax, Instramed and its respective logos are trademarks of Instramed Indústria Médico Hospitalar Ltda. The internal software of this product is Instramed’s intellectual property, being protected under international copyright laws. It is provided exclusively to be used with this present device, identified by the serial number, and may not be, in whole or in part, evaluated, recompiled or altered in any way.

CardioMax-quick-start-guide-eng-r11-2019-02-01
Battery use

Attention - first use

Before using the CardioMax for the first time, the equipment must receive a full battery charge. In order to do this, the equipment needs to be connected to an electric current for at least eight hours.

Attention - occasional use

Even when disconnected (stand-by), the CardioMax executes internal routines checking the status of the equipment. In spite of this procedure entailing a low power consumption, the battery charge may be consumed.

Therefore, whenever the device has not been connected to an electric current for more than 20 days, it is advisable to execute a full battery charge.

If this procedure is not performed, there is a risk of draining the battery and consequently being unable to use the CardioMax in its portable configuration (not connected to the electric current).

Storage

The battery must be removed from the equipment in case it is stored or not used.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child pads use</td>
<td>20</td>
</tr>
<tr>
<td>Defibrillation</td>
<td>21</td>
</tr>
<tr>
<td>Step 1 - Select energy</td>
<td>21</td>
</tr>
<tr>
<td>Step 2 - Charge</td>
<td>21</td>
</tr>
<tr>
<td>Step 3 - Shock</td>
<td>21</td>
</tr>
<tr>
<td>Disarm key</td>
<td>22</td>
</tr>
<tr>
<td>Synchronism - Synchronized discharge - Cardioversion</td>
<td>22</td>
</tr>
<tr>
<td>Defibrillation Display</td>
<td>22</td>
</tr>
<tr>
<td>Charge Auto-Sequencing Mode (Auto Seq)</td>
<td>23</td>
</tr>
<tr>
<td>Functional test</td>
<td>23</td>
</tr>
<tr>
<td>AED mode</td>
<td>24</td>
</tr>
<tr>
<td>Step 1 - Connect pads</td>
<td>24</td>
</tr>
<tr>
<td>Step 2 - Apply pads to patient</td>
<td>24</td>
</tr>
<tr>
<td>Step 3 - Select AED</td>
<td>24</td>
</tr>
<tr>
<td>Step 4 - Deliver shock</td>
<td>25</td>
</tr>
<tr>
<td>Step 5 - Start CPR</td>
<td>25</td>
</tr>
<tr>
<td>Pacemaker mode</td>
<td>26</td>
</tr>
<tr>
<td>Operating in pacemaker mode</td>
<td>26</td>
</tr>
<tr>
<td>Starting stimulation</td>
<td>26</td>
</tr>
<tr>
<td>Monitor mode - ECG</td>
<td>28</td>
</tr>
<tr>
<td>Monitoring ECG</td>
<td>28</td>
</tr>
<tr>
<td>Operating in monitor mode - ECG</td>
<td>29</td>
</tr>
</tbody>
</table>
NIPB monitoring 31
Monitoring Non-Invasive Pressure ................................................................. 31
Placing the armband .................................................................................... 31
Measurement modes .................................................................................. 31
NIBP numeric indicator ............................................................................. 32
Monitor mode - SpO₂ 33
Monitor mode - Capnography
Capnography monitoring ........................................................................... 34
EtCO₂ numeric indicator ........................................................................... 34
Monitor mode - Respiration 35
Respiration monitoring ............................................................................. 35
Respiration numeric indicator .................................................................. 35
Event and data storage 36
Data storage ................................................................................................ 36
Viewing and managing events .................................................................. 36
Printing 37
1 - Instant printing .................................................................................. 37
2 - Continuous printing ........................................................................... 38
3 - Stop printing ..................................................................................... 38
4 - Alarm printing .................................................................................... 38
5 - Shock printing .................................................................................... 38
RTC - Real Time Check 39
General .................................................................................................... 39
CPR Maestro 40
Using the CPR Maestro .......................................................... 40

PC connection 41
Requirements ............................................................................. 41
SoftDEA Installation ..................................................................... 41
Connecting the CardioMax to a PC ............................................. 41
RTC Installation ........................................................................... 42

Battery use 43
Power and battery charging indications ...................................... 43
First use ...................................................................................... 43
Occasional use .......................................................................... 43
Replacement .............................................................................. 43

Care and maintenance 45
Preventive maintenance ............................................................ 45
Corrective maintenance ............................................................. 45
Cleaning and disinfection ............................................................ 45

Warranty Certificate 46
The CardioMax is a modern, practical, lightweight and compact device that can be used in emergency situations and transported within hospitals or in ambulances.

The CardioMax offers the following parameters and/or characteristics (some parameters are optional):

- Exhaled carbon dioxide (EtCO$_2$) monitoring.
- Respiratory rate monitoring (RESP).
- ECG and cardiac frequency monitoring.
- Functional artery oxygen saturation monitoring (SpO$_2$).
- Non-Invasive pacemaker.
- Pressure monitoring (Non-Invasive method - NIBP).
- Biphasic Defibrillator.
- Automatic defibrillator mode (AED).
- Sudden Death Prevention Mode (SDP).
- Charge Auto-Sequencing mode (CAS).
- Printer.
- Feedback on the frequency and depth of chest compressions (CPR Maestro).
- Removable Battery.

Optional items

This manual refers to all of CardioMax’s functions, however, some of them are optional and may not be present in your equipment. The icon beside will appear next to the text, whenever an optional characteristic is mentioned.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Safety information

About this guide

This guide does not substitute the user manual. Its function is to familiarize the user with the main functions and ways of operating the equipment. For detailed information on the functioning of the CardioMax, please consult the user manual on the CD which accompanies the product.

Device care

- Do not place the equipment where it may fall on the patient. Do not lift the equipment by its cables or connections.
- Place cables connected to the patient in order to restrict the possibility of strangulation.
- Keep the defibrillator in a dry environment, avoiding places that allow liquids to spill over the monitor. Do not use the defibrillator if it is wet or excessively humid.
- Always keep the equipment and its accessories clean and well maintained.
- If you suspect a fall or external damage, do not use the equipment.

Grounding

Grounding is essential to protect the operator and patient against electrical discharge accidents.

ECG misinterpretation

**ATTENTION:** The following factors can cause ECG misinterpretation:

- Wrongly placed pads.
- Patient’s movements.
- Pacemaker (it may lessen the precision of the cardiac arrest detector).
- Radio frequency interference, including mobile phones.
- Excessive hair or wet skin in the application area of the electrodes.
- Pieces of clothing between skin and pads.

Warnings

Before installing the equipment verify if there are any abnormalities or damage caused by mishandling during transportation.
**WARNING:** The use of the CardioMax is restricted to one patient at a time.

**IMPORTANT:** This device must only be operated by qualified technical personnel. Before using, read the manual attentively.

**NOTICE:** the applied parts intended to come into contact with the patient have been evaluated and comply with the directives and principles of ISO 10993-1.

**WARNING:** CardioMax should not be used too close to or over other equipment. If this is necessary, it is recommended that the equipment or system be observed to verify the normal operation in the configuration in which it will be used.

**WARNING:** risk of explosion if the equipment is operated in the presence of flammable liquids or gases.

Electrical shock hazard: never open the device. Each and every repair must be performed by instramed’s authorized technical centers.

**ATTENTION:** Do not use CardioMax or its accessories in the presence of MRI equipment.

This equipment was projected to offer resistance to electromagnetic interferences. However, the functioning of this device can be affected in the presence of strong sources of electromagnetic-interference or radio-frequency, such as mobile phones, communicator radios, etc.

**WARNING:** always check the general state of the equipment, the battery and the accessories before using it.

**NOTICE:** the applied parts (electrodes, sensors, cuffs, etc.) are protected against defibrillation discharge; during discharge there may be baseline variation.

**WARNING:** when the CardioMax is operated in monitor mode, it can be used with other electromedical equipment simultaneously connected to the patient, provided that the other equipment are in compliance with the safety standards.

**WARNING:** the conductive parts of the electrodes and connectors associated with the applied parts, including the neutral electrode, must not come into contact with other conductive parts, including the ground wire.

**NOTICE:** avoid connecting the patient to several items of equipment at the same time. The limits of current leakage may be exceeded.

**WARNING:** the patient must be placed on non conductive surfaces.

**WARNING:** do not touch the patient, the equipment, the accessories nor any metallic or conductive surface which is in contact with the patient during the defibrillation.

**WARNING:** the patient must be completely still during the cardiac rhythm analysis phase (AED mode). Do not give cardiac massage at this point.

If the precision of measurements seems to be incorrect, first check the vital signs of the patient and then check the functioning of the CardioMax.

---

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
The equipment

Front panel

1. Transport handle.

2. LCD screen.

3. Selector switch: turns the equipment on and off. Selects the operation mode (see following chapters).

4. Quick access buttons (see “quick access buttons”).

5. E-Jog Control: equipment general configuration.

6. Power and battery charging indicators.
Side view

1. **Printer**: printer for thermosensitive paper. It prints electrocardiograms and events. For more information view the "Printing" chapter.

2. **SpO₂ connector**: BCI standard oximetry connector. Adult and child oximetry sensors.

3. **USB connector**: USB connector for access to data stored by the AED mode.

4. **NIBP connector**: Connector for direct use with the cuff.

5. **ECG connector**: Connector for ECG cables.

6. **CPR connector**: connector for use of the CPR MAESTRO accessory.

7. **Connector for defibrillation electrodes (pads)**: adult/child external pads, internal and multifunctional pads.

8. **Capnography exhaust connector**: connector used for the removal of the gases collected by capnography.

9. **Capnography connector**: connector for the capnography sampling line.
Rear connectors

1. **3-pin power connector**: input of 100 to 220 VAC, with central pin for grounding. 5A fuse (20mm 20AG F5A GLASS FUSE).

2. **External DC socket**: for battery connection or external DC source connection in a range of 11 to 16 VDC.

3. **Grounding and potential equalizer**: potential equalization and general grounding connector.

4. **RS-232 output**: cable socket for updating software (reserved for authorized technical personnel).

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Turning and operating

Use selector switch for turning CardioMax on and off. When turning on, the operator must immediately select an operation mode.

1. Selector switch: selects the operation mode.
2. Defibrillator mode: selects shock energy (1 to 360 J scale).
3. Auto Seq. mode: shock delivery in a sequence mode.
5. Turns equipment off.
6. Pacemaker mode: enables the external pacemaker.
7. AED mode: enables the Automated External Defibrillator (AED).
Operating the e-Jog Control

The e-Jog Control is used to access many functions and menus of the CardioMax, such as configuring alarms, defining the information displayed on the screen, altering parameters, etc.

Quick access buttons

- **Fast Lead Change**: enables quick access to change ECG leads.
- **Fast Sensitivity Change**: enables quick change of ECG sensitivity.
- **Print**: press once to print a quick report. For continuous printing, simply press the button for 3 seconds. For further information, see the “Printing” section.
- **Events**: when used with the e-Jog Control, it allows to mark an important event and store it in the equipment’s memory.
- **Pause audio**: press the button quickly to deactivate ALL sound alarms for a previously programmed period of time. Press for 3 seconds to deactivate ALL sound alarms for an INDETERMINATE period.
- **NIBP (when available)**: starts or suspends the functionality of the Non-Invasive Blood Pressure Measurement. *When the NIBP (optional) parameter is not present in the device, this button has no function.*
- **Freeze**: freezes graphic screen signals for a closer examination (same Cancel button).
Parameters visualization screen

1. ECG: ECG measurements and ECG alarms.
2. Pacemaker or defibrillation modes: area for the defibrillation or pacemaker modes.
4. Graph area for oximetry, ECG and EtCO₂ waveforms. Also used for configurations.
5. Time, date, battery and mode status.
6. Infocenter: Information on the equipment and its operation. This is how the device communicates with the user.
7. Access icons for event and configuration functions.
Access icons for events and configuration functions

1. Events menu: views events stored in the CardioMax.
2. Configuration menu: configuration of all the parameters of the equipment.
3. Printer menu shortcut: prints and configures the printing parameters.
4. Alarms menu shortcut: direct access to the menu which configures the alarms.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Physiological alarm: there are two ways to enable the physiological alarm indications: Asistoly and Violation of MAXIMUM or MINIMUM limits.

Technical alarm: sound and visual signals indicate that the CardioMax is not able to accurately monitor the patient’s status.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Defibrillator mode

Warnings

The CardioMax has a patient impedance meter that delivers shocks in 25 to 300 ohms impedances.

If a cable or conductor is suspected of being ruptured, avoid using the equipment.

Ensure that the defibrillation electrodes of the CardioMax are at an appropriate distance from other electrodes so that the power applied does not flow through these electrodes.

Disconnect all equipment devoid of protection against the discharge of defibrillators.

Ensure that the patient does not come into contact with any metallic parts.

External pads use

1 - Connect the defibrillation cable to the pads socket located on the equipment’s side.

2 - Take both pads from their base pulling them up and out.

3 - Apply the conductive material to the pads’ electrodes.

4 - Place pads as shown in the image below. The electrodes must be placed in a position which will maximize the current that passes through the myocardium, as indicated below:

A. Electrode identified as “STERNUM” on the right second intercostal space, mid-clavicular line.

B. Electrode identified as “APEX” positioned on the left sixth intercostal space, midaxillary line.

ENSURE that the electrodes are away from each other. DO NOT apply paste or gel to the thorax between the pads or the current may follow a superficial route along the thorax wall and not reach the heart.

5 - Check contact with the patient.
The STERNUM pad has a patient contact indicator. The indicator goes from BAD contact (red flashing LED) to GOOD contact (at least one LED on).

![LED Indicators]

**Warning:** When all LEDs blink simultaneously the pads have a short circuit, and shock delivery will not be permitted.

**Warning:** When only the red LED is blinking, shock delivery will not be allowed.

---

### Child pads use

1. **Fasten the lock in the front of the adult external pads.**
2. **Pull the pads base forward to remove them.**
3. **This exposes the smaller electrode for children.**

![Child Pad Diagram]

**A.** Adult pad (w/ the base).
**B.** Child pad (w/o the base).

**The CardioMax will automatically identify that it is operating in pediatric mode. Energy is limited to 50 Joules in the pediatric mode.**
Defibrillation

Step 1 - Select energy

Rotate the selection switch until you reach the energy desired.

Step 2 - Charge

Press the “Charge” button (green) in the front panel or use the charge button in the external pads (orange). While the CardioMax is charging, a sound will be emitted and the measurement of the charged energy will appear on the display.

When the charge is complete, the device sends a sound signal and displays “Charge Ready” on the screen.

Step 3 - Shock

After the “Ready” warning, press button 3 (Shock) in the front panel or use the two shock buttons in the external paddles.
**Disarm key**

Disarm the stored charge. Charge may be disarmed at any time, whether the charge is ready or not.

**Synchronism - Synchronized discharge - Cardioversion**

Monitor the patient with 3 or 5-leads ECG cables or with the defibrillation electrodes.

Press the “Sync” button in the front panel. Ensure that the synchronization marker is red and lined up with the ‘R’ wave and the “SYNC” indication is displayed next to the selected energy value. Follow steps 1-2-3 for defibrillation.

**IMPORTANT:** Keep key 3 (shock) or the two shock pad’s buttons pressed until the next “R” wave is identified. The CardioMax will deliver the shock when the next “R” wave is identified.

**Defibrillation Display**

1. Synchronism.
2. Selected and charged energy.
3. Elapsed time.
4. Defibrillation electrode type.
5. Number of shocks.
Charge Auto-Sequencing Mode (Auto Seq)

In the Auto Seq. mode, the shock energy levels will follow the order previously set by the user in: "Defibrillation > CHARGE AUTO-SEQUENCING.

Functional test

WARNING: The functional test must be executed daily in order to guarantee that the equipment is in working order and ready to use.

The functional test is available on the Configuration menu.

Step 1

Place pads on their base located on top of the equipment.

Step 2

Select 100J of energy.

Step 3

Press the “charge” key and wait until the equipment sends the charge ready signal.

Step 4

Press the “shock” key.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Step 1 - Connect pads

Connect the adhesive pads to the CardioMax using the side connector.

Step 2 - Apply pads to patient

Remove pads from their wrapping and peel off the film protecting the adhesive.
Place pads on the patient according to the picture above, keeping adhesive area in contact with the skin.

**ATTENTION:** the area in contact with the pads must be dry.

Step 3 - Select AED

Rotate the selector switch to the AED position.

The CardioMax will automatically enter cardiac rhythm analysis mode and will start giving vocal instructions.
Step 4 - Deliver shock

If the need for shock is detected, the shock symbol will blink and the device will ask the user to press the shock button.

Press “SHOCK” button again. The shock will be delivered.

**ATTENTION:** the user must not touch the patient or conductive surfaces in contact with him/her during shock delivery, under risk of suffering a powerful electric discharge.

If clinical scans show that defibrillation is not recommended, the CardioMax will announce: “TREATMENT NOT RECOMMENDED”.

Check if there was no movement of the patient during the analysis. If so, restart the process. If not, remove pads and start the CPR (cardiopulmonary resuscitation) procedure.

Step 5 - Start CPR

After the shock, start the CPR procedure.

Using the CardioMax on children under 8 years old

The CardioMax can be used on children from the age of one year onwards. However, on patients from one year of age to eight years of age or patients who weigh less than 40kg, some precautions must be taken:

- Use child pads;
- If the pads cannot be placed within the minimal distance of 4 centimeters between them, place one of them on the child’s chest and another on his back.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Pacemaker mode

Operating in pacemaker mode

Place the selector switch on pacemaker mode.

With the e-Jog, navigate on the yellow area to configure the pacemaker’s parameters. The pacemaker will start without the delivery of stimulation pulses.

1. PPM: selection of the pacemaker’s stimulation frequency.
2. Changes between “PAUSE” and “ON”.
3. Allows the change between “FIXED” and “DEMAND” modes.
4. mA: alters the stimulation current in milliamperes.

Starting stimulation

1 - If not yet connected, connect the adhesive pads cable to the CardioMax.
2 - Insert the adhesive pads connector into the equipment’s extension cable.
3 - Put the adhesive pads on the patient according to package instructions.
4 - In case of demand mode stimulation, apply ECG monitoring electrodes.
5 - Rotate the dial to the pacemaker mode. Choose the FIXED or the DEMAND mode.
6 - Select the leads for ECG viewing. Check if the “R” wave indicators mark every “R” wave present on the screen. If not change the derivation.
7 - With the e-Jog, adjust the initial current and frequency (PPM) values (see the previous page). The current value must be as low as possible.
8 - Move the e-Jog to the “ON” function. A message in the “Infocenter” will inform the pacemaker is active.
9 - Check if the pacemaker’s pulse meter appears on the screen.
10 - Increase the stimulation current until the heart rate is captured. This is indicated by the presence of the QRS complex right after the pacemaker marker.

**NOTES:** Stimulation will not start if there is a problem with the multifunction (adhesive) paddles or contact with the patient.

If defibrillation is necessary, turn the switch to defibrillation mode. The CardioMax automatically inhibits the pacemaker’s stimulation pulse.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Monitor mode - ECG

Monitoring ECG

1 - Connect the ECG cable into the ECG socket in the equipment’s side panel.

2 - Select the electrodes to be used on the patient. Use only one kind or brand of electrode. The electrodes must follow AAMI standards for electrode performance.

3 - Prepare the application area according to the manufacturer instructions.

4 - Apply the electrodes according to the images below, following the color pattern on the table on the following page.

5 - Connect the patient’s ECG cable to the electrodes.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Operating in monitor mode - ECG

1. ECG Symbol. The ECG icon represents an expanding heart that indicates that the ECG’s “R” wave peak has been detected.

2. ECG numeric value and BPM measuring unit.

3. “BELL” icon indicates that the alarm has been activated, inhibited or suspended.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Cardiomax has embedded algorithms for measuring ST levels. The visual indication will occur in the column at the end of the parameter curves, before the numerical values.

**Note:** When available
NIPB monitoring

Monitoring Non-Invasive Pressure

1 - Connect the extremity of the extension hose to the equipment’s front panel.

2 - Measure the limb in which the armband will be applied to and select an adequate type.

3 - Place the armband according to the “Placing the armband” item.

4 - Connect the armband to the extension hose.

5 - Select one of the measurement modes: manual, automatic or stat.

Placing the armband

1 - Select the measurement place.

2 - Check the cuff’s appropriate size for the chosen area. More details in the user manual.

3 - Make sure the limb is supported to guarantee that the armband is at the heart’s level.

4 - Ensure the ARTERY Mark is above the brachial artery.

Measurement modes


2 - Long-term automatic: measurements are automatically repeated during the time set by the operator. To activate the automatic mode select the desired time in the “Configuration Menu > NIBP”.

31
NIBP numeric indicator

1. Numeric values for systolic/diastolic and mean pressures.
2. Number of measurements exerted (used in automatic measurements).
3. Time interval between measurements (used in automatic measurements).

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Connect the SpO₂ cable to the socket located on the right side of the equipment and put the patient’s finger on the indicated spot.

1 - The “BELL” Icon – indicates audio in pause or off.
2 - Digital scale indicating pulse amplitude.
3 - SpO₂ numeric value.
4 - Patient’s pulse frequency value, obtained by the oximetry sensor.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Capnography monitoring

To start the EtCO₂ measurement, navigate through the “Configuration Menu – CO₂” – and set the “CO₂ – On/Off” item to ON.

Right after the start, the EtCO₂ module performs a procedure called “auto zero”, which is necessary for the proper functioning of the equipment.

During this procedure, no measurements are exerted.

Connect the following accessories:

1. Non-intubated patient: sampling line and nasal cannula.
2. Intubated patient: sampling line and “T” connector.

EtCO₂ numeric indicator

1. EtCO₂ measuring units. They can be displayed in mmHg or %.
2. Informs the value of CO₂ measured at the end of expiration in mmHg or a percentage.
3. Respiratory numeric value and the measuring unit.
4. The “BELL” Icon – indicates audio in pause or off.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Monitor mode - Respiration

Respiration monitoring

The breathing signal is obtained by ECG electrodes.

In order to improve breathing performance, you can change the position of the ECG electrodes, opting for alternative places. You must reposition RA and LA in a way so that they are applied below the nipples, as shown in the picture on the right.

WARNING: When repositioning the electrodes, the ECG waveform and amplitude may change.

WARNING: Only the respiration numeric value is obtained by the CO₂ module. The waveform is not.

Respiration numeric indicator

- 1. Respiration symbol.
- 2. Apnea alarm – displayed when breathing suspension is detected.
- 3. Respiration numeric value.
- 4. Measuring unit (respirations per minute).

Yellow indicators show that the respiratory frequency is originated via ECG cable, blue indicators show that the respiratory frequency is originated via capnography.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Event and data storage

Data storage

The CardioMax creates an event list for each patient observing the following criteria:

- **Automatically**: a new patient is identified every time the equipment is turned on.
- **Manually**: via the events setup menu.

**ATTENTION**: When the events memory is completely full the CardioMax will not store any new event until its memory has been erased.

Viewing and managing events

Event setting works on defibrillator, monitor and pacemaker mode and allows you to manually mark events.

To view, manage and print stored events use the e-Jog control to select the “e” icon in the main screen’s configuration menu.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
The thermal printer (optional item) allows you to manually or automatically print events, shock or electrocardiogram reports. To activate the printer, press the print button, located in the equipment’s front panel or use the e-Jog control to enter the printing menu.

1 - Instant printing

When the print button is pressed for LESS than three seconds, the CardioMax prints a fast report.

Quick Printing - GSI printer:

- ECG: [171] bpm
- SPO2: [100] %
- Shock: 3
- Time: 05:17
2 - Continuous printing
When the print button is pressed for MORE than three seconds, the CardioMax prints a continuous report for an indeterminate period of time or until printing is interrupted.

3 - Stop printing
To interrupt continuous printing or instant printing, press the print key again.

4 - Alarm printing
When the “alarm printing” option is enabled (in the printing setup menu), the CardioMax prints an instant report whenever an alarm goes off.

5 - Shock printing
When the shock printing option is enabled (in the printing setup menu), the CardioMax prints an instant report whenever the equipment identifies shock delivery. In this report you can see the equipment’s operation mode at the moment of the defibrillation: MANUAL mode, SYNC mode and AED mode.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
RTC - Real Time Check

General

It allows a self-diagnosis of defibrillation, battery level, connected paddles, and verification of the device’s connection to the power outlet. Check carried out at three pre-configured times. Transmission of this information, wirelessly, to a computer with RTC system software installed on it and within reach of the network.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
The CPR Maestro is an accessory from CardioMax, created to help rescuers perform compressions in accordance with the latest CPR recommendations. Its sensors measure the frequency and depth of chest compressions, providing the user with real-time feedback. These information are displayed on CPR Maestro and CardioMax screens and through sound recommendations.

Note: Because it is an accessory, it can not be used by itself. Only connected to CardioMax.

The CPR Maestro parameter must work on DEFIBRILLATION, CHARGE AUTO SEQUENCE and AED modes. On AED mode, the messages on screen and the audible ones will only be presented after the orientation “Perform CPR for 2 minutes.

To turn off the equipment, simply press the ON/OFF button for 3 seconds. The parameter will be automatically turned off on the CardioMax screen.

Using the CPR Maestro

1 – Connect the CPR Maestro to CardioMax, using the input indicated, located on the side of the equipment.

2 – Place the device on the patient’s chest.

This step is important and must always be followed. When the equipment is initialized, the CPR sensors are calibrated, enabling the evaluation of the compressions. The initialization with the device out of the recommended position may cause incorrect evaluations.

3 – Press the ON/OFF button, on the side of the equipment. At this moment, the equipment is not ready to be used yet.

4 – A message on the CPR MAESTRO will be displayed to confirm that the device is positioned correctly in the patient’s chest, where compressions will be performed. If it is, press the ON / OFF button again and start compressions.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Requirements

The CardioMax can be connected to a computer through the installation of two pieces of software: SoftDEA and RTC applications. This software is found on the CD that comes with the device.

To install the SoftDEA application and/or the RTC application, observe the following requirements.

- Windows XP, Windows Vista or Windows 7 operating system.
- CPU of 300 MHz or faster.
- 02 GB free hard disk space.
- Minimum 512 MB RAM (1 GB recommended).
- CD or DVD ROM reader unit.

For physical connection to the PC:

- One available USB port.

SoftDEA Installation

- Insert the program CD in the CD/DVD ROM drive.
- If the autorun does not start automatically, find the "softdeasetup.exe" file in the CD and double-click it.
- Follow the installation instructions which will show up on the screen.

Connecting the CardioMax to a PC

- Connect the equipment only after installing SoftDEA.
- After the installation connect the device through an USB cable.
- The location of the device drivers to be installed will be required. They can be found in this folder: C:\Program Files\Instramed\SoftDEA\DRIVERS.
- Start the SoftDEA application.
- On the language selection screen, choose among Spanish, English or Portuguese. You only have to select a language the first time you start the software.
- After the software reads the CardioMax data, the ECG and the events list will appear on the software’s screen.
RTC Installation

- Insert the program CD in the CD/DVD ROM drive.
- If the installer does not initiate automatically, locate the “RTC” file or “Real Time Check” on the program CD and double click on it.
- Follow the installation instructions that appear on the screen.

Note: Check that the “Wireless Reception Unit” is connected to the computer by USB prior to installing the SW. After completing the installation, links will be created to run the program on the Windows start button and on the desktop.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Battery use

Power and battery charging indications

1. Power Connected: when the LED is on, it indicates that the equipment is connected to a power source or an external battery.

2. Battery Charging: when the LED is on, it indicates that the battery is charging.

First use

Before using the CardioMax for the first time, the equipment must receive a full battery charge. In order to do this, the equipment needs to be connected to an electric current for at least eight hours.

Occasional use

Whenever the device has not been connected to an electric current for more than 20 days, it is advisable to execute a full battery charge.

Replacement

1. Press the side tabs to unlock the removable battery.

2. The battery will automatically detach itself from the equipment as shown in the picture.
3 - Manually remove the battery from the equipment.
4 - Correctly position the new battery.
5 - Push the new battery until it firmly locks into the cabinet.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Care and maintenance

Preventive maintenance

Instramed recommends that the CardioMax be examined by a qualified technician every 12 months. We recommend that you contact the manufacturer for more information about qualified and trained personnel in your area to perform preventive maintenance.

It is recommended that periodic inspections be performed on the equipment’s power supply charger, cables and connectors in order to determine possible isolation or internal conductor ruptures.

Functional tests must be performed at the beginning of every work shift.

Corrective maintenance

If the equipment needs repair, this can only be done by Instramed or its authorized representative, otherwise this Warranty certificate may no longer be valid.

No internal parts are to be fixed by the user.

Cleaning and disinfection

Instramed recommends cleaning and disinfecting the equipment and its accessories every three months, or shorter periods whenever excessive dirt or contamination is noticed.

More information on this topic is available in the CardioMax User Manual present on the CD which accompanies the product.
Instramed Indústria Médico Hospitalar Ltda. warrants the equipment described in this Certificate for 12 (twelve) months, starting from the delivery date. This warranty covers manufacturing or material defects that prevents proper functioning according to the specifications stated herein, as long as the conditions presented in this Certificate are respected.

During the warranty period, Instramed Indústria Médico Hospitalar Ltda. or its representative will repair or replace defective parts, at no expense to the equipment’s owner.

This warranty will no longer be valid if any damage occurs due to accident, natural disaster, improper connection to a power source, use distinct from that described in the User manual, or irregular working conditions.

Any attempt to violate, adjust or repair this equipment by individuals not authorized by Instramed Indústria Médico Hospitalar Ltda. will automatically invalidate this warranty. This also applies in case of alterations made to this contract, the fiscal receipt, or to the equipment’s serial number.

Instramed Indústria Médico Hospitalar Ltda. is not responsible for the improper use of this equipment, by people who are not familiar with its function or the techniques recommend for its proper use.

EQUIPMENT: ____________________________________________________________

SERIAL NUMBER: ________________________________________________________

PURCHASE DATE: ________________________________________________________

FISCAL RECEIPT NUMBER: ________________________________________________