

Ready to use, because, to save lives, each compression is vital.



CMOS  
DRAKE



BIPHASIC  
DEFIBRILLATOR  
MONITOR

Vivo

"As every man hath received the gift, even so, minister the same one to another, as good stewards of the manifold grace of God."

Peter, 4:10

# DIFFERENTIAL DEFIBRILLATOR VIVO

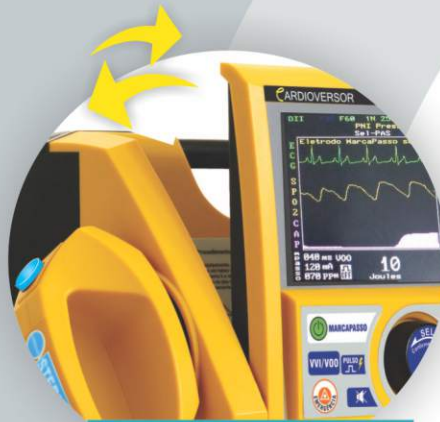
## INNOVATION

PROTECTION  
LEVEL IP44



INTERCHANGEABLE  
PADS  
Adult/Pediatric

COMPACT AND STRONG  
DIMENSIONES REDUCIDAS



FLIP DOWN DISPLAY  
Multiple angles

LIGHT  
WEIGHT  
approx.  
4.3 kg



## OPTIONAL EXTRAS ACCESSORIES

SUPPORT FOR  
MOBILE ICU



SUPPORT FOR HARNESS

TRANSPORTATION BAG

Stows all accessories.  
Waterproof.  
Made in Cordura fabric (400)



INTERNAL PADS  
Adult/Pediatric,  
with discharge button

# OPTIONAL MONITORED PARAMETERS

**INNOVATION**  
**CPR FEEDBACK**

# BIPHASIC DEFIBRILLATOR VO



- Pulse oximetry (Masimo technology)
- Methemoglobin and carbon monoxide (Masimo technology)
- Noninvasive pressure (Par-medizin and Sun Tech technology)
- AED mode - Automated External Defibrillator
- Noninvasive External Pacemaker
- Capnography (Respironics technology)
- Thermal printer
- Connection with output for mobile ICU
- Touch Screen
- CPR Feedback



**PULSE OXIMETRY**  
Methemoglobin and  
carbon monoxide  
(Masimo technology)

**TOUCH  
SCREEN**



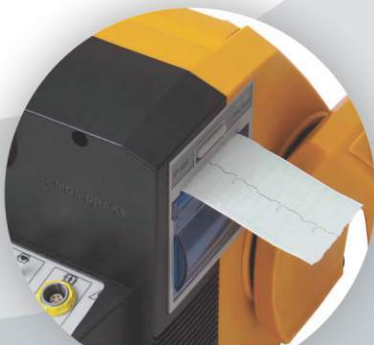
**EXTERNAL  
PACEMAKER**



**NIBP  
NON INVASIVE  
BLOOD PRESSURE**  
(Par-medizin Technology)



**12 VDC CONNECTION  
FOR MICU**



**THERMAL  
PRINTER**



**SOFTWARE FOR  
DRUG CALCULATION**



**CAPNOGRAPHY**  
(Respironics Technology)

## PROTECTION LEVEL IP44

This high level protection against the entrance of liquid and solid residues (water, saline solution, blood, dust, and solid particles), tested in accordance with standard IEC60529, increases the equipment life cycle. Equipment with a protection level of lower than IP44 is more sensitive and subject to recurring damages.



The **BIPHASIC DEFIBRILLATOR VIVO** is an electronic, micro-processed, lightweight, portable equipment unit, developed and designed to monitor vital signs, cardioversion, and/or defibrillation, in which electrical shocks are applied to the heart. Used in adult and child patients, and in all hospital environments, clinics, air and road rescue units, and similar environments. Comes with truncated exponential, biphasic technology, built-in transport handle, and LCD display (colored liquid crystal, 7", high definition (Optional: 8.4" with touch screen).

## TECHNICAL CHARACTERISTICS



### DEFIBRILLATION

**Truncated exponential biphasic waveform** with 1 to 200 joule charge, or optional 1 to 270 and 1 to 360 joule charge, with operation instructions, on the **CARDIOVERTER** panel, or other power setup as desired by the user.

### VENTILATION/INTUBATION

### SOFTWARE FOR DRUG CALCULATION

### ELECTROCARDIOGRAM-ECG

- 3 leads (DI, DII, DIII), through 3-way ECG cable.
- 12 leads (DI, DII, DIII, aVL, aVR, aVF, and V1 to V6), through 5-way ECG cable.
- 12 leads (DI, DII, DIII, aVL, aVR, aVF, and V1 to V6), through 10-way ECG cable for 6 simultaneous.
- ECG signal capture by defibrillation paddles; pacemaker transthoracic adhesive paddles, by defibrillator reusable paddles; and/or by the ECG patient cable.
- Heart frequency: 0 to 300 bpm.
- Accuracy of 01 BPM, with numerical display
- Sensitivity (ECG amplification stage): 05, 10, 15, 20, 30, 40 mm/mv, 60 Hz surge protector, common mode rejection rate greater than 90dB.

# TOP TECHNOLOGY IN A SINGLE EQUIPMENT

## CHARACTERISTICS OF THE OPTIONAL MONITORED PARAMETERS

### AED MODE - AUTOMATED EXTERNAL DEFIBRILLATOR

In AED mode, the equipment is capable of analyzing the patient's ECG and of automatically identifying the presence of Ventricular Fibrillation (VF) and Ventricular Tachycardia (VT). These are arrhythmias to be treated with electrical shock by the AED.

The equipment will issue sound and visual signals for the indicated treatment, signaling that a shock must be delivered to the patient.

Use in AED mode is only recommended in case of Sudden Cardiac Arrest (SCA), patients who are unconscious and do not breathe normally. Therefore, the VIVO Cardioverter should only be used in AED mode if the patient exhibits such conditions.

Voice and text prompt on display to instruct the rescuer.

- Metronome - CPR Assistance: Sound indication that assists and guides the rescuer as to the appropriate chest compression rhythm.
- Optional items: Child electrodes.

### CPR FEEDBACK

INNOVATION  
RELEASE

#### CPR FEEDBACK

CPR Feedback is the system that sends text and voice prompts to guide the rescuer in providing more effective chest compression. The system analyzes the compression quality and tells the rescuer how to improve chest compression to ensure its effectiveness. **THIS IS KEY TO INCREASING THE PATIENTS' CHANCE OF SURVIVAL** Correctly performed CPR is essential for treating any CPR victim and may **DOUBLE OR TRIPLE the victim's CHANCES OF SURVIVAL**.

Inappropriate treatment may bring harmful consequences to the patient, such as rib, sternum, pneumothorax, and hemothorax fractures, and even non-resuscitation.

Therefore, the AHA recommends the use of the CPR feedback device to perform high quality chest compression. Several studies demonstrate that the use of CPR feedback devices increase patient survival rates.

### THERMAL PRINTER

**HIGH DEFINITION PRINTER**, with automatic and manual channel record, manual or automatic activation after each trip.

#### AUTOMATIC SELF-TEST

Allows the user to perform peripheral and serial charge and discharge tests automatically. The report may only be generated and printed automatically if the equipment menu is accessed, resulting in reliability and safety.

It enables independent manual cardioversion records by the paddles, such as date, time, impedance, heart rate, and power level selected in defibrillation, impedance, synchronized defibrillation, alarm triggering, derivation, ECG amplitude, etc.

- Record printed on 50 mm (width) x 20 m (length) thermosensitive paper.
- Printing speed 12.5-25-50mm/sec.

### EXTERNAL PACEMAKER

The **EXTERNAL PACEMAKER** was developed to stimulate the heart in cases of rhythm disorders or failure in the internal conduction of its electric impulse. It is used in cardiac surgery as an emergency cardiac pacemaker.

Some transthoracic applications recommended for the pacemaker include: Treating symptomatic bradycardia or bradyasystole during emergencies, and during and after cardiac surgery to make inserting a transvenous stimulating electrode easier.

Transthoracic, noninvasive, and multiprogrammable external pacemaker in Demand, Asynchronous (fixed), and Emergency modes. Control of the stimulation process using the cardioverter keyboard.

The application of stimulation pulses may be viewed by a LED on the panel.

**Three operation modes are possible:** VOO, VVI, and Emergency.

In the VOO and VVI modes, the pacemaker will stimulate and transmit information to the display (amplitude, width, frequency, and mode).

**Stimulation current:** With no connected charge: 200 mA;

**Off:** 0mA;

ECG captured by the adhesive paddles;

**Stimulation output:** Adhesive electrodes (PADs);

**Frequency:** The stimulation frequency may be varied from 30 to 200 ppm;

**Amplitude:** The amplitude value may be set between 2 and 200 mA;

**Width:** pulse width may be selected between 5 and 50 ms;

#### STIMULATION SYSTEM SPECIFICATION

**Stimulation frequency:** 30 ppm to 200 ppm, in 1 ppm increments;

**Pulse amplitude:** 0 mA to 200mA, in 1 mA increments;

**Pulse width:** 0 ms to 50 ms, in 1 ms increments;

**Emergency:** VOO 70 ppm - 100 mA 20ms.

The specifications above (frequency, amplitude, and pulse width) may be changed if requested by the user.

### NONINVASIVE PRESSURE - NIP

Sun Tech Medical Technology  
(USA)

Par-medizin Technology  
(Germany)

- Systolic, diastolic, and average blood pressure readings, using the oscillometric method for adult, pediatric, and neonatal patients.
- Displays simultaneous data on the screen, manual and automatic operation modes.
- In the automatic mode, they may be programmed between 1 and 120 minutes.
- Programmable cuff inflating interval.
- Automatic zero before each measurement.
- Alarm for minimum, average, and maximum pressure.
- With sound and visual alarms automatically tripped, with low and high limits set are exceeded, for blood pressure and heart rate. With O3 priority levels.
- Blood pressure measurement range: up to 300 NMhG.
- Heart rate measurement range: from 30 BPM to 300 BPM.
- The Sun Tech Medical technology is provided with a smart system for measuring noninvasive pressure quickly, even in a patient with muscle movements.
- **Optional:** Clamp, cuff/hose (adult, child, and neonatal).

# INNOVATION

## METHEMOGLOBIN (SpMET) CARBON MONOXIDE (SpCO)

Masimo Rainbow set technology (USA)

The Masimo Rainbow SET technology, by means of optical sensor that uses 7 different waveform lengths, offers measurement for the following parameters: Oxygen saturation, pulse rate, perfusion rate, co-oximetry, methemoglobin saturation, methemoglobin percentage (SpMET), carbon monoxide percentage (SpCO), SIQ waveform (visual indicator of plethysmography waveform data reliability), and perfusion index (PI) indicators.

Its technology offers greater measurement reliability in cases of movement and low perfusion, in addition to enabling future updates, including new measurement parameters.

## PULSE OXIMETRY – SPO<sub>2</sub>

### MASIMO RAINBOW SET TECHNOLOGY (USA)

WITH PLETHYSMOGRAPHY WAVEFORM, indication of oxygen saturation values and pulse frequency shown in the number and percentage display.

Plethysmography waveform amplitude set on screen.

Complete alarm system with sound and visual indication on SPO<sub>2</sub> level, by means of pulse signal tone.

Alarm and pulse sound indicator volumes are set separately.

Adjustable audiovisual alarms: low and high SPO<sub>2</sub>, and low and high heart rate (bradycardia and tachycardia). Undetected pulse and disconnected sensor alarms, 2-minute alarm mute key. Good response in low perfusion.

- Sampling range: from approximately 70% to 100%.
- Measured saturation precision is undetermined, when it is between 0% and 69%.
- **Optional items:** adult SPO<sub>2</sub> clip, child clip, universal Y, and ear sensors.

## CAPNOGRAPHY – ETCO<sub>2</sub>

### RESPIRONICS TECHNOLOGY (USA)

The capnography module uses miniature 'Sidestream' and 'Mainstream' sensors. After the sensor is connected, it is essential to wait approximately 01 minute for the assembly to be ready for measurements. The on light in the sensor indicates it is enabled. After it is connected to the respirator tube, patient information will be provided. The capnography sensor must be on the adapter to avoid condensation, which can interfere in the reading measurement.

#### Capnography Functional Characteristics

- Exhaled CO<sub>2</sub> waveform continually shown on the screen.
- Optional self-calibration procedure, which does not require the use of specific gases for periodical calibration. CO<sub>2</sub> and respiratory rate values shown continually on the screen.
- Self-calibrating miniature sensor that does not require the use of specific gases for periodical calibration. Exhaled CO<sub>2</sub> value, minimum CO<sub>2</sub> inhaled and respiratory rate values shown continually on the screen.
- Self-calibrating miniature sensor.



BIPHASIC  
DEFIBRILLATOR  
MONITOR **Vivo**

# Practical with top clinical results



## TECHNICAL SPECIFICATIONS

7" high definition **colored LCD** (liquid crystal display) and/or touch screen.  
OPTIONAL ITEM: 8.4" touch screen.

**Laptop system:** Mechanical system that enables several screen viewing angles. Essential wherever the patient is..

### DEFIBRILLATION SCALE

**200-joule version:** 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 40, 45, 50, joules for child defibrillation (external paddle) and internal adult defibrillation (internal paddle), and: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 35, 40, 45, 50, 70, 90, 100, 110, 120, 150, 180, 200 joules for adult defibrillation (external paddle).

**270-joule version:** 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 40, 45, 50, joules for child defibrillation (external paddle) and internal adult defibrillation (internal paddle), and: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 35, 40, 45, 50, 70, 90, 100, 110, 120, 150, 180, 200, 270, joules for adult defibrillation (external paddle).

**360-joule version:** 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 40, 45, 50, joules for child defibrillation (external paddle) and internal adult defibrillation (internal paddle), and: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 15, 20, 25, 30, 35, 40, 45, 50, 70, 90, 100, 110, 120, 150, 180, 200, 270, 360, joules for adult defibrillation (external paddle).

**Interchangeable external paddles for adult and child use,** internal paddles for adult and child use, disposable child paddles for pacemaker, AED, monitoring, and defibrillation. Paddle support, through pressure holding system.  
Optional items: **Invasive paddles** (adult, child, and neonatal) with discharge button.

**Built-in transport handle,** which may be used regardless of the transport bag.

**Adaptable to any patient,** with smart safety system, which limits the charge for internal, pediatric/neonatal use.

Use of **interchangeable reusable electrodes** (permanent adult/child paddles), which requires simultaneous activation of both controls, one for each paddle, minimizing the risk of accidental shocks.

**Charge level selection** through the "APEX" PADDLE key, charges by activating the "STERNUM" PADDLE key and triggers through the paddles, activating both paddle keys simultaneously.

**Clear indication of the phases:** charging/reading, discharging/tripping.

**Analysis of the patient's thoracic impedance,** increasing defibrillation effectiveness and reducing the risk of cardiac injuries.

**Charge time: less than 5 seconds for 200 joules.** Factory adjustable between 200 and 360 joules.  
With electric system supplied equipment, or supplied by new and fully charged battery, the charge time for power is 5 seconds for 200 joules and less than 10 seconds for 360 joules (the charge time may be previously set, at the customer's discretion).

**Monitoring the contact between the paddles** and the patient's thorax, through Bargraph on display and on the shock paddles, by LED.

**Paddle-patient contact indicator** showing the contact quality on the display.

**Automatically canceled charge,** after 30 seconds, if it is not triggered. On the manual mode, it may be canceled through the "cancel" key. The message "CANCELED" will show on the display.

**Clock, Chronometer** (second counter), **Date, and Shock counter.**  
Performs diagnostic self-test when powered on.  
Indicates charge value and mode on the screen.  
Automatic charge setup

**Language:** Portuguese, with English or Spanish as options.

When in "**SYNCHRONIZED MODE**", it performs synchronized charge with QRS complex, with power delivery time <200 ms.

**Maximum delay time for signal stabilization:** 05 seconds after ideal connection between sensor and patient.

When the BIPHASIC DEFIBRILLATOR VIVO is setup in the **automatic mode**, the charge power follows a **trigger sequence** of 150J, 200J, and 200J. **Pacemaker pulse detection.**

**Views all programming parameters,** beep indicator, battery status, etc. on the display.

**Rechargeable Lithium Polymer battery** with manageable internal charger, with capability for up to 220 shocks. Easily replaceable - no need to open the equipment.  
Optional: **Lithium-Ion battery with QUICK COUPLING SYSTEM. 5 seconds for change.** Rechargeable with manageable internal charger, with capacity for **300 shocks at 200 joules. 7000 mAh / 16.8 VDC battery.**

**Approximately 10 hours of monitoring,** with fully charged battery.  
Recharge time of up to 4 hours, if totally discharged. 7000 mAh / 16.8 VDC battery.

**USB port:** Enables USB communication with a computer for transferring data from the memory; Enables reading of the ECG outline afterwards, from an event memory through specific hardware and/or software (OPTIONAL).

**Internal memory of approximately 2GB.** Enables recording continuous ECG memory, critical events, and performed procedures. **Internal event memory, including waveform, date, and time.** Data extraction using computer, via USB.

Connection with port for Mobile ICU - 12 VDC.

**Supply:** 100 to 240 VAC – 50/60H automatic.

**PROTECTION LEVEL: IP44 against the entrance of solid and liquid residues.**

**Weight:** Approximately 4.3 kg, including accessories.

## REGISTERED AT THE HEALTH DEPARTMENT

- ISO 9001: 2008
- ISO 13485: 2004
- 8Registered at the Health Department under protocol number 0058130015

- Applicable INMETRO standards:  
IEC 60601-1, IEC 60601-1-2, IEC 60601-2-4, IEC 60601-2-27, IEC 60601-2-30; IEC 60601-4-49, IEC 60601-1-8, IEC 60601-1-6, IEC 62366, ISO 14971, Protection level IP44 (IEC60529).

*Technical specifications subject to changes without notice. Please refer to the equipment manual for more technical details.*



BIPHASIC DEFIBRILLATOR  
MONITOR



ICU ADVANCED  
PULMONARY VENTILATOR



AUTOMATED EXTERNAL  
DEFIBRILLATOR

## SALES AND FURTHER INFORMATION

US DEFIB MEDICAL TECHNOLOGIES (an American Company) is the **EXCLUSIVE REPRESENTATIVE OF CMOS DRAKE'S PRODUCTS IN THE INTERNATIONAL MARKET.**



-  + 1 786 203 0797
-  [sales1@usdefib.com](mailto:sales1@usdefib.com)
-  [www.usdefib.com](http://www.usdefib.com)

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