INSTRAMED

DualMax

All in one.

The most complete and innovative biphasic wave monitor/defibrillator/cardioverter on the market, provides the ideal solution for addressing various demands in urgent, emergency, transportation, or stationary use.

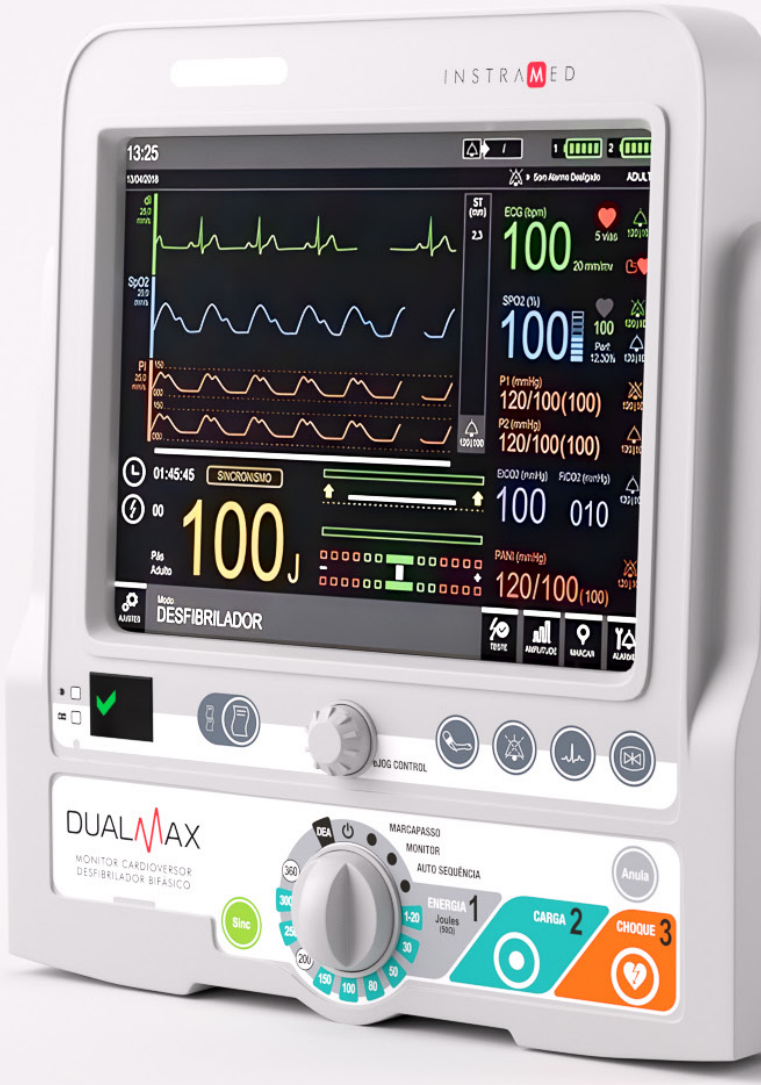
DUALMAX

• Monitor • Cardioverter
• Defibrillator

The DualMax offers advanced features and the most comprehensive range of monitoring parameters in a single device. Whether it's due to its portability, fast charging, or the versatility of its functions, we are committed to providing an innovative solution that redefines how we address medical challenges, delivering the best possible care in critical moments. Our medical monitoring platform not only embraces the most advanced technologies but also stands out for its adaptability, customization, and reliability.

Every minute is urgent.

The DualMax has unique features for the emergency care segment that optimize time and increase the chances of achieving its purpose: saving lives.



Auto CAS Sequencing

Allows pre-programming of charges from 10 to 360 J for the first, second, and third shocks, optimizing the process and saving time by avoiding manual adjustments on the selector.

RTC Real Time Check

Performs self-diagnostics and provides advance notice if any maintenance actions are required, ensuring it is always ready for immediate use.

IoMT PATENTED

During care, monitored parameters are transmitted via 4G to a Medical Center or specialists, enabling rapid and precise intervention.

Available parameters

- Cardioverter
- Defibrillator
- Automated External Defibrillator (AED)
- Electrocardiogram (ECG)
- Respiratory Rate Monitoring
- ST Segment Analysis
- Calculation of Isometric Intervals
- QRS Freeze
- Non-Invasive Pacemaker
- Oximetry (SpO2)
- Temperatures (02 channels)
- Invasive Pressures (02 channels)
- Non-Invasive Pressure Monitoring (NIPB)
- Capnography
- Arrhythmia Analysis
- Sudden Death Prevention

Optimizing every second.

Advanced technology and software designed to meet the needs of emergency care, wherever it occurs.

Functional and practical.

Quick access to main functions via the control panel and/or touchscreen*, along with paddles featuring a ready charge indicator and patient contact detection. Compatible with the CPR Maestro.

Exclusive features.

The DualMax offers the largest screen among its competitors, with a 10.4" LCD touchscreen* display. Additionally, its ability to charge up to 360 J in less than 6 seconds makes it the fastest on the market.

TECHNICAL INFORMATION

EN

GENERAL SPECIFICATIONS

- **Dimension with pads**
  - Height: 30 cm.
  - Width: 31 cm.
  - Depth: 24 cm.
- **Weight**
  - Without battery and external pads: 5.15 kg (11.35 lbs).
  - Full set with 2 batteries: 6.60 Kg (15.66 lbs)
- **Alarms**
  - Priorities: 2 types (medium and high).
  - Notification: audible and visual.
- **Volume**
  - 10 adjust levels (multiple tones).
- **Alarm silence**
  - 60 seconds.
- **Alarms auto set (modes)**
  - Neonate, pediatric and adult.
- **NIBP automatic measurement**
- **Memory**
  - Type: SD card.
  - Capacity: 4 Gb.
  - Stored patients: 100 patients, with up to 800 events per patient.
  - Storage: 24 seconds (12 seconds before and 12 seconds after) of ECG when the event is generated.
  - ECG: 2 continuous hours recording of ECG curve when in AED mode.
- **Protection index**
  - IP55.
- **Power**
  - AC: 100 to 240 VAC, 50/60 Hz.
- **DC external**
  - 11 to 16 VDC.
- **Maximum consumption**
  - AC: 400 W.
  - Battery 15 A.
- **Removable rechargeable battery:**
  - Type: Li-Ion, 14.8 VDC 4.4 A/h.
- **Operation time with 02 batteries, without printer**
  - 7 hours in monitor mode, or a minimum of 280 shocks at 360 J or a minimum of 400 shocks at 200 J.
- **Time to fully charge the battery (when fully depleted):**
  - 4 hours.
- **RTC - Real Time Check**
  - Defibrillation self-test, battery level, connected pads, power source connection check. Check is performed 3 times which are set in advance. This information is wirelessly transmitted* to a PC with RTC System software installed and within range of the network.
- **QRS freeze**
- **Bluetooth***
- **CPR Filter***
- **Analysis of arrhythmias***

DISPLAY

- **Battery level indication**
  - Yes.
- **Tipo**
  - 1024 x 768 pixel (XGA) TFT color (active matrix) LCD with touchscreen*.
- **Diagonal**
  - 10,4' (210,43 mm x 157,82 mm).
- **Leads**
  - Allows up to 12 simultaneous leads.*
- **Screen visualization**
  - Smart interface that automatically adjusts to the number of parameters, always providing optimal visualization.
- **Scan speed**
  - 6.25,12.5, 25 and 50 mm/s (varies according to the parameter presented).
- **Touchscreen***
  - Allows the user to interface with the product by touching directly on the device's screen.

DEFIBRILLATOR

- **Waveform**
  - Biphasic truncated exponential. Wave shaped parameters adjusted according to the patient's impedance.
- **Shock application**
  - By means of multifunction pads or external adult/child pads.
- **Scales for adult/external defibrillation**
  - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 50, 80, 100, 150, 200, 250, 300 and 360 J.
  - Maximum energy limited to 50 J with child pads.
- **CAS - Charge auto-sequencing**
  - When enabled, it charges power previously set by the user for the first, second and third shocks, with no need to manually adjust the selector.
- **SDP - Sudden Death Prevention**
- **Energy selection**
  - Selector switch in front panel.
  - Energy selection in the external pads**.
- **Charge command**
  - Button in front panel, buttons in external pads.
- **Shock command**
  - Button in front panel, buttons in external pads.
- **Synchronized command**
  - Sync key in front panel.
- **Charge indicators**
  - Audio indication of equipment being charged.
  - Audio indication of charge completed.
  - LED on external pads and charge level indicated on display.
- **External pads size**
  - Adult = 10.3 cm x 8.5 cm (contact area = 81.9 cm²).
  - Children = 4.5 cm x 4 cm (contact area = 18 cm²).
- **Pads cable length**
  - 2 meters.
- **Cardioversion**
  - < 60 ms.
- **Maximum output electric current**
  - 70A (25 Ω).

AED MODE

- **Functional characteristics**
  - Voice commands, visual indications, CPR instructions, USB 2.0 for PC connection, multi-languages.
- **Defibrillation scales:**
  - Adult: 150 and 200 J.
  - Child: 50 J.
- **USB**
  - USB 2.0 for transferring electrocardiogram stored in AED mode to a compatible PC.
- **SoftDEA**
  - Software for viewing data transferred to PC.
- **Waveform**
  - Truncated exponential biphasic pulse. Waveform parameters adjusted according to the patient's impedance.
- **Shock delivery**
  - By means of multifunctional pads (adhesive) or defibrillation pads.
- **Adult/children's selection**
  - Automatic due to the size of the pads.
- **Charge command**
  - Automatic after identifying an arrhythmia.
- **Shock command**
  - Frontal panel button, "shock".
- **Maximum charge time (with 100% of the minimum specified voltage)**
  - 200 Joules: < 6 seconds.
  - 150 Joules: < 4 seconds.
  - 50 Joules: < 2 seconds.
- **Maximum time from rhythm analysis beginning to discharge readiness**
  - 20 seconds.
- **Maximum time from beginning of defibrillator operation to discharge readiness in maximum energy**
  - 30 seconds.
- **Size of adhesive pads**
  - Adult = area: 82 cm2.
  - Child = area: 30 cm2.

CPR MAESTRO*

- Accessory for cardiac massage feedback, it presents visual and audible messages guiding the rescuer in relation to the speed and depth of the massage, providing a cardiac massage with greater efficiency.

EXTERNAL PACEMAKER*

- **Waveform**
  - Single-phase rectangular pulse.
- **Modes**
  - Demand or fixed.
- **Amplitude**
  - Between 5 mA to 200 mA (resolution of 5 mA), precision 10%.
- **Pulse width**
  - 20 ms (± 1 ms).
- **Frequency:**
  - Between 30 PPM to 180 PPM (increments of 5 PPM), precision ± 2%.
- **Refractory period**
  - 340 ms (between 30 to 80 PPM).
  - 240 ms (between 90 to 180 PPM).
- **Maximum output voltage**
  - 350 V.

ECG

- **Entradas**
  - ECG patient cable and the corresponding derivations
  - 03 leads*: DI, DII and DIII.
  - 05 leads: DI, DII, DIII, aVL, aVR, aVF and C.
  - 10 leads*: DI, DII, DIII, aVL, aVR, aVF, C1, C2, C3, C4, C5, C6.
  - External defibrillation pads.
  - Multifunctional adhesive pads.
- **Sensitivity**
  - 5, 10, 15, 20, 30 and 40 mm/mV.
- **Filter**
  - 35 Hz or 60 Hz.
- **Range**
  - 15 to 350 BPM.
- **Precision**
  - ± 1 BPM between 15 and 350 BPM.
- **Indication of ECG signal low amplitude or saturation**
- **Rejection of pacemaker stimuli with widths between 0.1 and 2 ms and amplitude between ± 2 and 700 mV**
- **ECG response frequency**
  - Diagnostic mode: 0.05 - 100 Hz.
  - Monitor mode: 1 - 40 Hz.
- **Physiological alarm**
  - Minimum level: 30-100 BPM.
  - Maximum level: 100-250 BPM.
  - Visual indication.
  - Sound indication.
- **Technical alarm**
  - Alarm not locked.
  - Visual indication.
  - Sound indication.
- **Time to re-establish the ECG baseline after defibrillation**
  - ≤ 3 seconds.
- **Tachycardia alarm time**
  - 206 BPM (0.5 mV): 5 seconds.
  - 206 BPM (1 mV): 5 seconds.
  - 206 BPM (2 mV): 5 seconds.
  - 195 BPM (1 mV): 5 seconds.
  - 195 BPM (2 mV): 5 seconds.
  - 195 BPM (4 mV): 5 seconds.
- **Heart rate response time**
  - 80 to 120 BPM: maximum of 7 seconds.
  - 80 to 40 BPM: maximum of 11 seconds.
- **ST segment analysis**
  - Performs the ST elevation measurement.
- **Defibrillator charge**
  - The equipment complies with 50.102.2 standard IEC 60601-2-27.

RESPIRATION

- **Technique**
  - Transthoracic impedance.
- **Range**
  - 3 to 150 breaths per minute.
- **Precision**
  - ± 3 breaths per minute.
- **Sensitivity**
  - 1, 2, 3, 4, 5 and 6.

  Apnea adjustments
  - OFF, 5, 10, 15, 20, 25, 30, 35 and 40 seconds.

OXIMETRIA - SpO2*

- **SpO2 range**
  - 0 to 100 % (in BCI).
  - 1 to 100 % (in Nellcor**).
- **Pulse range**
  - 30 to 250 BPM (in BCI).
  - 20 to 300 BPM (in Nellcor**).
- **Precision**
  - ± 2% between 70 and 100% (in BCI).
  - ± 3% between 50 and 69% (in BCI).
  - ± 3% between 70 and 100% (in Nellcor**).
- **Pulse precision**
  - ± 2 BPM (in BCI).
  - ± 3 BPM between 20 and 250 BPM (in Nellcor**).

NON-INVASIVE ARTERIAL PRESSURE - NIBP*

- **Technique**
  - Oscilometric.
- **Automatic mode**
  - 1, 2, 3, 4, 5, 10, 15, 30, 60 and 90 minutes.
- **Manual mode**
  - One measurement.
- **Measurement ranges**

  Adult
  - Systolic: 40 to 260 mmHg.
  - Mean: 26 to 220 mmHg.
  - Diastolic: 20 to 200 mmHg.

  Pediatric
  - Systolic: 40 a 160 mmHg.
  - Mean: 26 a 133 mmHg.
  - Diastolic: 20 a 120 mmHg.

  Neonatal
  - Systolic: 40 to 130 mmHg.
  - Mean: 26 to 110 mmHg.
  - Diastolic: 20 a 100 mmHg.
- **Resolution**
  - 1 mmHg.

INVASIVE PRESSURE - IBP*

- **Filter**
  - 50 and 60 Hz.
- **Measurement range**
  - 99 mmHg to 310 mmHg.
- **Clearing interval**
  - ± 70 mmHg.
- **Precision**
  - ± 1%, ± 1 digit, whatever is bigger.
- **Transducer**
  - 5 µV/V/mmHg, disposable or reusable.

CAPNOGRAPHY - EtCO2*

- **CO2 measurement range**
  - 0 to 99 mmHg.
- **Precision**
  - ± 2 mmHg (0 - 38 mmHg).
  - ± 5% + 0.08%. For each 1 mmHg above 38 mmHg (39 – 99 mmHg).
- **Calibration**
  - 02 points.
- **Start**
  - 10 seconds to start the CO2 curve and < 1 minute for full functioning.
- **Compensation**
  - BTPS, N2O, O2.

TEMPERATURE*

- **Range**
  - 0°C to 50°C (32°F to 122°F).
- **Precision**
  - ± 0.1°C (0.18°F).
- **Compatible with the YSI 400 series for temperature sensors.**

PRINTER*

- **Type**
  - Thermal.
- **Weight**
  - 0.2 Kg.
- **Paper width**
  - 58 mm.
- **Maximum length**
  - 15 meters.

INCLUDED ITEMS

- **Default**
  - 01 mains supply power cable (3 pins)*.
  - 01 pads set for adult and child external defibrillation paddles.
  - 01 adhesive pad for adults.
  - 01 5-lead ECG cable.
  - 01 multifunctional connection cable for PM/AED.
  - 01 quick guide.
  - 01 CD of Instramed's manuals and softwares.
  - 02 removable and rechargeable batteries.
- **When ECG 12D is present**
  - 01 10-lead ECG cable.
- **When Oximetry (SpO2) is present**
  - 01 oximetry sensor for adults.
- **When Temperature is present**
  - 01 superficial temperature sensor for adults.
- **When Non-Invasive Blood Pressure (NIBP) is present**
  - 01 adult armband (cuff).
  - 01 armband (cuff) extensor.
- **When Invasive Pressure (IBP) is present**
  - 01 transducer.
  - 01 electrical cable.
  - 01 clamp.
  - 01 sampling line.
  - 01 organizer.
- **When Capnography (EtCO2) is present**

  01 disposable capnography accessories kit, including:
  - 01 adult tracheal sampling line.
  - 01 child tracheal sampling line.
  - 01 adult nasal sampling line.
- **When PRINTER is present**
  - 01 white thermo sensitive paper bobbin 58 mm x 15 m x 40 mm.

OPTIONAL ITEMS

- Consult one of our representatives.

STANDARDS

- NBR IEC 60601-1
- NBR IEC 60601-1-2
- NBR IEC 60601-1-4
- NBR IEC 60601-1-6
- NBR IEC 60601-2-4
- NBR IEC 60601-2-27
- NBR IEC 60601-2-30
- NBR IEC 60601-2-49 or equivalent IEC's.

*Optional. **Please, check availability.

Instramed Indústria Médico-Hospitalar Ltda.

RS Unit
Beco José Paris, 339 - Pavilhão 18
ZIP 91140-310 - Porto Alegre - RS - Brazil
Tel.: +55 51 2313-3430

SC Unit
Rua Albatroz, 237 - Pedra Branca
ZIP 88137-290 - Palhoça - SC - Brazil
Tel.: +55 48 4042 4427

WWW.INSTRAMED.COM.BR

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