MEDIANA

D500

Defibrillator/Monitor

Saving Lives Everyday!

D500

Defibrillator/Monitor

LCD
Waveform & Text display

NIBP

Temperature 1

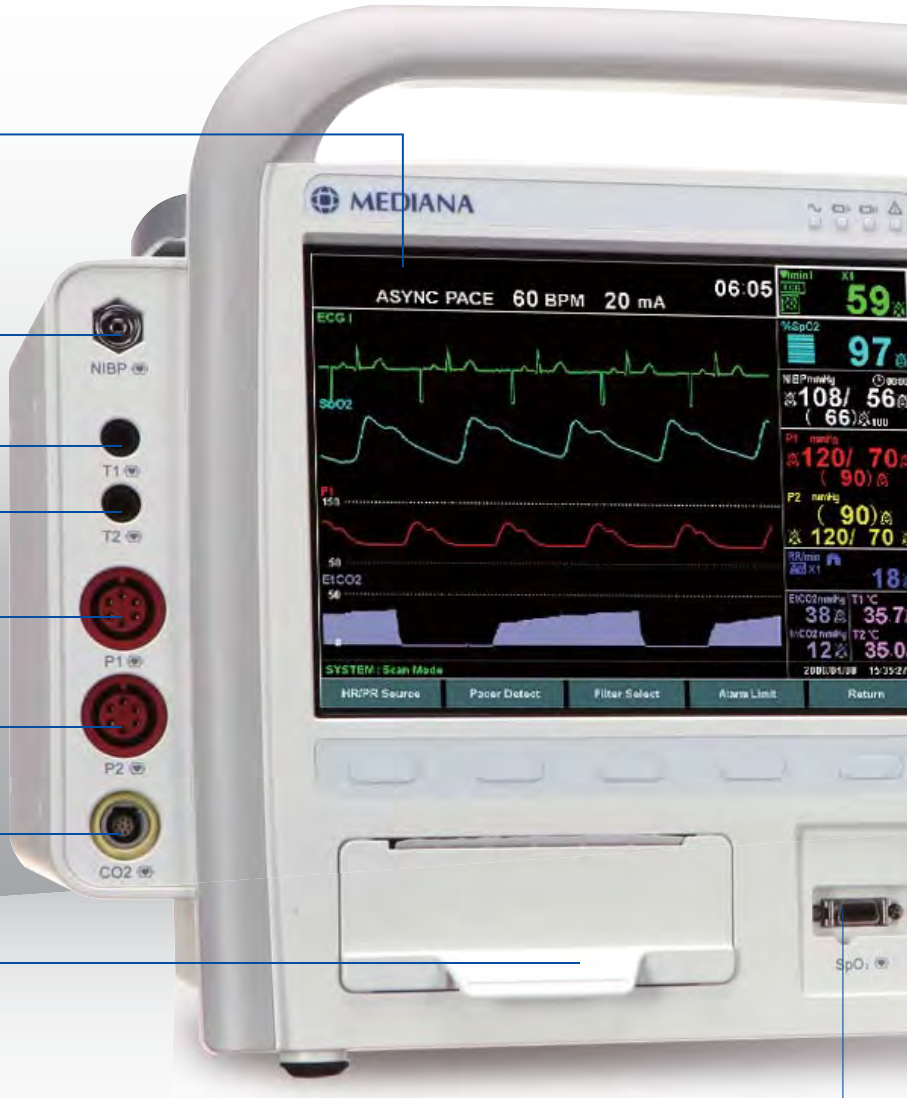
Temperature 2

IBP 1

IBP 2

RESPIRONICS
Capnography

Integrated Thermal Printer

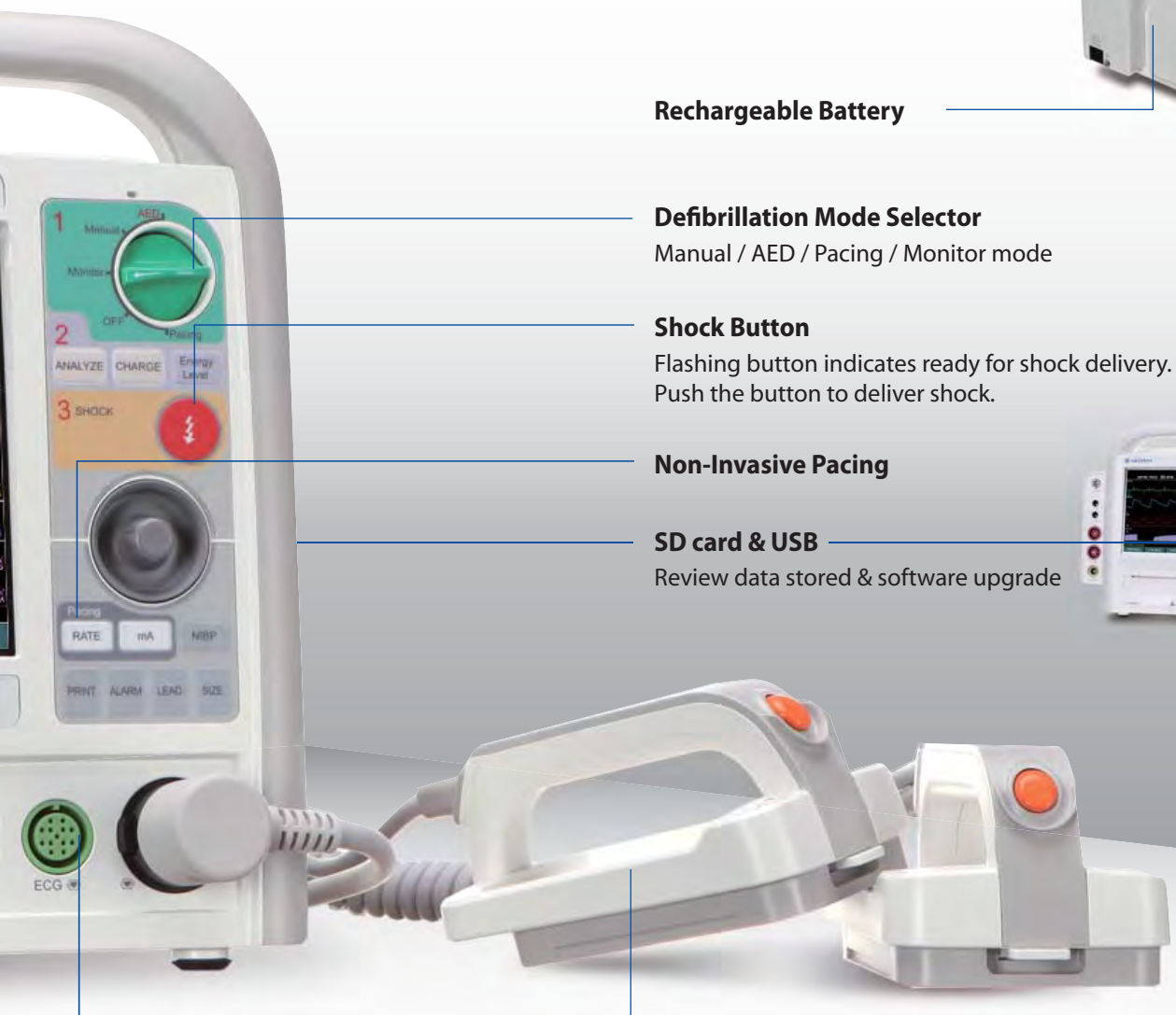


Nellcor Oximax Sp02
Pulse Oximetry

Biphasic Defibrillation,
Pacing and Complete Monitoring in one Portable Device.

- Multifunctional Defibrillator/Monitor
- Manual and AED Operation
- Non-invasive Pacing Mode
- Advanced Biphasic Technology
- Defibrillation with Paddles
- 12 Lead ECG Monitoring

Rechargeable Battery



Defibrillation Mode Selector
Manual / AED / Pacing / Monitor mode

Shock Button
Flashing button indicates ready for shock delivery.
Push the button to deliver shock.

Non-Invasive Pacing

SD card & USB
Review data stored & software upgrade

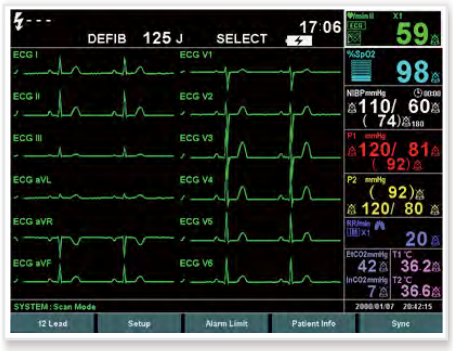
12 Lead ECG Glasgow Algorithm

University of Glasgow

Paddle (Pediatric & Adult)

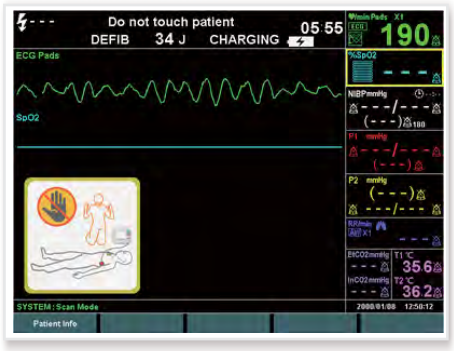
D500 Defibrillator. Quality you can trust.

Monitoring-12 Lead ECG Display



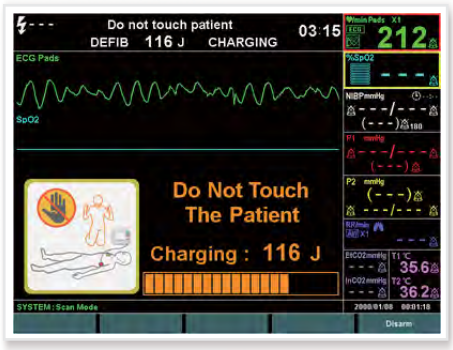
Full range of monitoring options available, including 3/5/12 Lead ECG (Glasgow University), Nellcor SpO2, Omron NIBP, IBP, Temp and Respironics EtCO2.

AED



Semi-Automatic AED mode with easy to follow step-by-step visual and audio instructions.

Manual Defibrillation

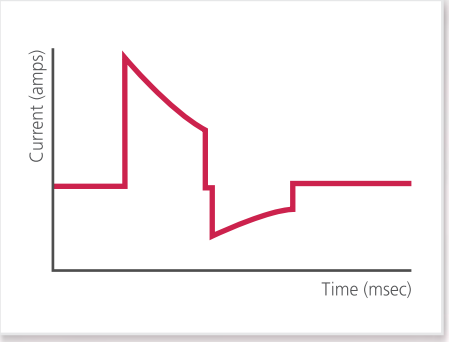


Biphasic Manual Defibrillation with maximum Energy level of 360 J.
With Synchronous Cardioversion.

Non-Invasive Pacing

Demand and Non-Demand Pacing modes with Pacing rates adjustable from 30 to 180 ppm.

Biphasic Waveform



Most effective Biphasic Truncated Exponential Waveform with impedence compensation. (25 to 175 Ohm)

Data Storage

Powerful memory for saving of numerical data and ECG, EtCO2 and IBP waveforms.
Saves data for up-to 100 patients and 250 events.

Dual Battery

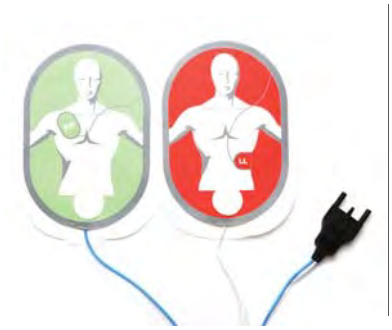
Dual Battery system with Automatic Switching.
Each battery supports a minimum of
100 shocks and 5 hours operating time.

Integrated Thermal Printer

Device features an integrated Printer with
80 mm Paper Width that can print up to
3 Channels and Report / Patient information.
12 lead interpretive Analysis Report.

Paddle (Pediatric & Adult)

Pads



ECG Cables

D500 Defibrillator / Monitor

Specification

Display

Screen Size : 170.0*128 (mm) (8.4 in diagonally across the TFT-LCD screen)
Screen Type/Color : Liquid Crystal Display (LCD) Color
Resolution : 800*600 pixel

Controls

Standard Knob; Mode key (Off, AED, Manual, Pacing and Monitor); 11 buttons (Shock, Select Energy Level, Charge, Analyze, NIBP, LEAD, Alarm, Size, Print, RATE, mA); 5 soft key

Alarms

Categories : Patient Status and System Status
Priorities : Low, Medium and High Priorities
Notification : Audible and Visual
Setting : Default and Individual
Alarm Volume Level : 45 to 85 dB

Physical Characteristics and Printer

Instrument

Dimensions	340*305*210 (mm) (W*H*D) including a battery excluding paddles, options and accessories
Weight	6.16 kg including battery excluding paddles, options and accessories

ECG: Type CF with defibrillation protection
SpO2: Type CF with defibrillation protection
Temperature: Type CF with defibrillation protection
EtCO2: Type CF with defibrillation protection
NIBP: Type CF with defibrillation protection
IBP: Type CF with defibrillation protection
Paddle: Type CF with defibrillation protection
Mode of Operation : Continuous

Printer

Type	Thermal
Weight	190g
Number of Channels	1 to 3 channels
Paper Width	80 mm
Printer Speed	25 mm/s

Electrical

Instrument

Power Requirement AC Mains 100 to 240 V, 50/60 Hz, 60 to 160 VA
DC Mains 18Vdc, 7.0A with DC/DC adapter, Model:MDD150-1218
(MDD150-1218: Input: 12-16Vdc, 160VA, Output: 18Vdc, 7.0A)

Battery (Option)

Type	Li-ion battery
Voltage	14.4V / 6600mAh
Discharge	A minimum of 200 shocks at 200 Joules (per battery)
Operating Time	5 hours (per battery) At the following condition: no printing, no external communication, no audible alarm sound and room temperature: 25°C
Recharge	5 hours with D500 turned on/off
Dual Battery	Automatic Switching

Environmental Conditions

Operation

Temperature	0 to 50°C (32 to 122°F)
Humidity	15 to 95% RH, non-condensing
Altitude	-170 to 4,877 m (-557 to 16,000 ft)
Water Resistance	IP34

Transport and Storage (in shipping container)

Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	15 to 95% RH, non-condensing
Altitude	-304 to 6,096m (1,000 to 20,000ft)

Defibrillator

Biphasic Waveform : Biphasic Truncated Exponential
Resuscitation Guidelines : Selectable AHA/ERC

Manual Mode

Shock Energy Level : External Paddles:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 300, 360J
Automatic Discharge Time : 60 seconds
Charging Time to 200J : Within 6 seconds with rated main voltage/DC main Voltage(battery Within 7 seconds)
Charging Time to 360J : Within 8 seconds with rated main voltage/DC main Voltage(battery Within 9 seconds)
Synchronous Cardioversion : Energy transfer begins within 60msec of the QRS peak

AED Mode

1 ch ECG measurement

Lead	Lead II
Patient Impedance	25 to 175 Ohm
Heart Rate	20 to 300 bpm
Charging Time to 200J	Within 6 seconds with rated main voltage/DC main Voltage(battery Within 7 seconds)

Delivered Energy

The D500 delivers shocks to load impedances from 25 to 175 Ohms. The duration of each pulse of the waveform is dynamically adjusted based on delivered charge, in order to compensate for patient impedance variation, as shown below;

Load resistance (Ohm)	Delivered energy (Joule)
25	203
50	198
75	200
100	199
125	198
150	197
175	197

Pacer

Pacing Mode	Demand or non-demand
Pacing rate	30 ppm to 180 ppm
Resolution	2 ppm
Accuracy	± 1.5 ppm
Output current	0 mA to 140 mA
Resolution	2 mA
Accuracy	± 5% or 5 mA

QRS Marker : In the demand mode

ECG

Heart Rate

Measurement Rate	0, 20 to 300 bpm
Resolution	1 bpm
Accuracy	±5 bpm

ECG (Electrocardiograph)

Leads	3 / 5 / 12 Lea Lead I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, Paddles, Pads
Lead Off Detection	Detected and displayed
Pacer Detection	Detected pacer pulses of ±2mV to ±700mV with pulse widths of 0.1 to 2msec and rise times 10% of width not to exceed 100msec

Input;

Input Impedance	5 M Ohm or more
Input Dynamic Range	±5mV AC, ±300mV DC
Voltage Range	±0.5mV ~ ±5mV
Signal Width	40 to 120 ms (Q to S)

Output (Frequency Response);

ECG Filter	3/5 Lead ; 0.5 to 21 Hz 0.05 to 40 Hz 1 to 21 Hz 12 Lead ; 0.05 to 40Hz 0.05 to 150Hz
ECG size	5.0, 10.0, 15.0, 20.0, 30.0 mm/mV
Display Sweep Speeds	25.0 mm/sec
Display Sensitivity	10 mm/mV
Pacing Pulse Detection	On, Off
Electrode Disconnect Alarm	Display and/or sound
Common Mode Rejection(CMRR)	90 dB or more
Defibrillator Discharge Recovery	less than 5 sec per IEC 60601-2-27
Defibrillation Protection	Protected

Interpretive Algorithm

12-Lead Interpretive Algorithm	University of Glasgow 12-Lead ECG Analysis Program

Respiration

IM Respiration

Technique	Impedence Pneumography
Range	0, 3 to 120 breaths/min
Resolution	1 breaths/min
Leads	RA to LA
Base impedance	500 to 2000 ohm
Delta impedance	0.5 to 3 ohm
Lead Off Condition	Detected and displayed
Defibrillator Protection	Protected

AW Respiration

Technique	Non-dispersive Infrared Spectroscopy
Range	0 to 150 breaths/min
Accuracy	±1 breaths/min
Display Sweep Speeds	25 mm/sec

NIBP

Pulse Rate

Pulse Rate Range	Adult/Pediatric	40 to 200 bpm
	Neonatal	40 to 240 bpm

Resolution 5 bpm
Accuracy : ±2 BPM or ±2%, whichever is greater

NIBP (Non-Invasive Blood Pressure)

Technique	Oscillometric Measurement	
Measurement Modes	Off, cont, 1, 2.5, 3, 5, 10, 15, 30, 60, 90 minutes	
Measurement Range	Adult/Pediatric	
	SYS	60 to 250mmHg
	MAP	45 to 235mmHg
	DIA	40 to 200mmHg
	Neonatal	
	SYS	40 to 120mmHg
	MAP	30 to 100mmHg
	DIA	20 to 90mmHg
NIBP Accuracy	Mean error and standard deviation per ANSI/AAMI SP10:2002+A1:2003+A2:2006	
Pressure Display Range	Adult/Pediatric	0 to 300 mmHg
	Neonatal	0 to 150 mmHg
Pressure Display Accuracy	Adult/Pediatric	±10mmHg
	Neonatal	±5mmHg
Initial Cuff Inflate Pressure	Adult/Pediatric	120, 140, 160, 180, 200, 220, 240, 260, 280mmHg
	Neonatal	80, 90, 100, 110, 120, 130, 140 mmHg
Automatic Cuff Protector	Adult/Pediatric: 300 mmHg Neonatal: 150 mmHg	
Defibrillator Protection	Protected	
Measurement Speed	About 20 seconds	

IBP

Pulse Rate

Pulse Rate Range	20 to 250 bpm
Pulse Rate Resolution	1 bpm

Pulse Rate Accuracy : ± 1 % or ± 1 bpm

IBP (Invasive Blood Pressure)

Parameter Displayed	P1, ABP P2, CVP, PAP, LAP
Measurement Range	-50 mmHg to 300 mmHg 20 bpm to 250 bpm
Resolution	1 mmHg
Input Sensitivity	5 µV/V/mmHg
Transducer Volume Displacement	0.1 mm3/100 mmHg
Zero Calibration Range	± 100 mmHg
Frequency Response	25 Hz
Wave Size	0 to 20, 0 to 50, 0 to 100, 0 to 200, 0 to 300, Auto Size
Display Sweep Speeds	25.0 mm/s
Defibrillator Protection	Protected

SpO2

Measurement Ranges

SpO2 saturation range :	1% to 100%
Pulse rate range :	20 to 300 beats per minute (bpm)
Perfusion range :	0.03% to 20%
Display sweep speed :	25.0 mm/s

Measurement Accuracy

Pulse rate accuracy	20 to 250 beats per minute (bpm) ±3 digits
SpO2 saturation accuracy	70% to 100% ±2 digits, neonates: ±3 digits

Note: SpO2 saturation accuracy – De¬brillator/monitor measurements are statistically distributed; about two-thirds of de¬brillator/monitor measurements can be expected to fall in this accuracy (ARMS) range.
Reference the Clinical Studies section for test results. For a complete listing of SpO2 accuracy across the full line of available Nellcor™ sensors, contact Covidien, a local Covidien representative, or locate it online at www.covidien.com.

Operating Range and Dissipation

Red Light Wavelength Approximately : 660 nm
Infrared Light Wavelength Approximately : 900 nm
Optical Output Power : Less than 15 mW
Power Dissipation : 52.5 mW

Capnography

Display	EtCO2, InCO2
Range	0 to 150 mmHg
Accuracy	0 to 40 mmHg ±2 mmHg of reading 41 to 70 mmHg ±5% of reading 71 to 100 mmHg ±8% of reading 101 to 150 mmHg ±10% of reading
Display Accuracy	±2 mmHg
Response Time	Mainstream: Less than 60ms Sidestream: Less than 3sec
Gas Compensation	User selective at O2 > 60% and N2O > 50%
Warm Up time	2 minutes maximum
Sound Noise Level	Less than 41dB when ambient sound pressure level is 22dB
Sweep Speeds	25.0mm/sec

Temperature

Probe Types	Thermistor probe YSI compatible type
Parameter displayed	TEMP1, TEMP2
Range	0°C to 50°C (32°F to 122°F)
Resolution	±0.1°C
Defibrillator Protection	Protected

Trend

Data	12 lead, Events
Memory	12 lead saves ECG waveform, ECG analysis result data, ECG analysis date and time, HR/PR, NIBP, SpO2, Respiration, Temperature, IBP 1, IBP 2, EtCO2 numeric data,alarm condition Event saves total 250 data saves defibrillation shock information (number of shock, energy level, actual passed energy, impedance), pacing information (pace rate, pace current, async mode), linical action list, 1 channel ECG waveform, Event date and time, HR/PR, NIBP, SpO2, Respiration, Temperature1, Temperature2, IBP 1, IBP 2, EtCO2 numeric data, alarm condition
Data storage	Internal memory, SD card

Optional Items

Non-invasive Blood Pressure with cuffs and cuff hoses
SpO2 (Nellcor) with DS-100A and DOC-10
12 Lead ECG with Interpretation from the University of Glasgow
Continuous Temperature Monitoring
EtCO2, selectable either Mainstream or Sidestream from Respironics
Invasive Blood Pressure Monitoring (2 lines)
Wi-Fi/3G Communication module
Wireless LAN data trans mission
Additional Battery

Our mission is to save lives by developing, manufacturing
and selling state-of-the-art medical technology.
Our ultimate goal is to earn the trust of our customers by using
our imagination and skills to continuously offer better medical solutions.

MEDIANA

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