



D500

Defibrillator/Monitor



Saving Lives Everyday!

D500

Defibrillator/Monitor

LCD
Waveform & Text display

colin NIBP

Temperature 1

Temperature 2

IBP 1

IBP 2

RESPIRONICS
Capnography

Integrated Thermal Printer



Nellcor Oximax SpO2
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



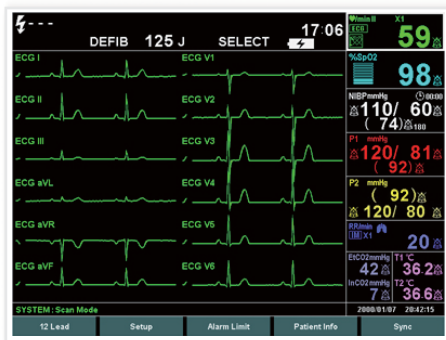
12 Lead ECG Glasgow Algorithm

Paddle (Pediatric & Adult)



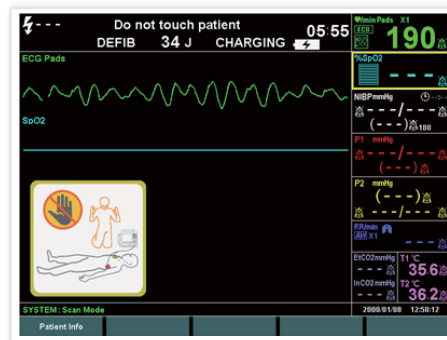
D500 Defibrillator. Quality you can trust.

● **Monitoring-12 Lead ECG Display**



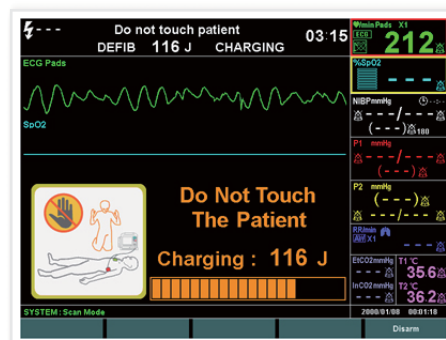
Full range of monitoring options available, including 3/5/12 Lead ECG (Glasgow University), Nellcor SpO2, Omron NIBP, IBP, Temp and Respironics EtCO2.

● **AED**



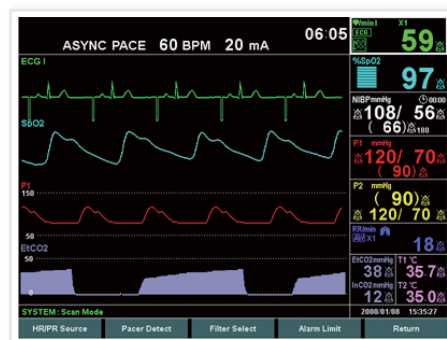
Semi-Automatic AED mode with easy to follow step-by-step visual and audio instructions.

● **Manual Defibrillation**



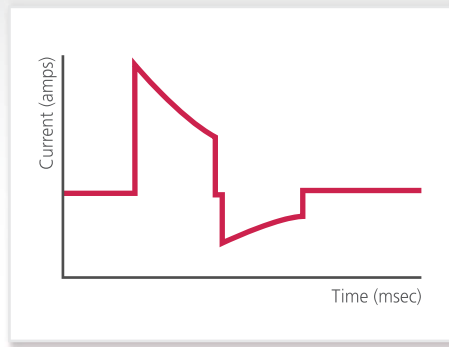
Biphasic Manual Defibrillation with maximum Energy level of 360 J. With Synchronous Cardioversion.

● **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 impedance 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**



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 $\pm 2\%$, 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	± 10 mmHg
	Neonatal	± 5 mmHg

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 : $\pm 1\%$ 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 μ V/mmHg

Transducer Volume Displacement 0.1 mm³/100 mmHg

Zero Calibration Range ± 10 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, lnCO2
---------	--------------

Range	0 to 150 mmHg
-------	---------------

Accuracy	0 to 40 mmHg ± 2 mmHg of reading
	41 to 70 mmHg $\pm 5\%$ of reading
	71 to 100 mmHg $\pm 8\%$ of reading
	101 to 150 mmHg $\pm 10\%$ 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	$\pm 0.1^\circ$ 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 Seoul Office

Mediana Building, #793-3, Bangbae-dong,
Seocho-ku, Seoul, Korea (P.C: 137-830)
Tel : +82-2-542-3375 Fax : +82-2-542-7447

Mediana Head Office / Factory / R&D

Wonju Medical Industry Park, #1650-1, Donghwa-ri,
Munmak-eup, Wonju-si, Gangwon-do, Korea (P.C : 220-801)
Tel : +82-33-742-5400 Fax : +82-33-742-5418

www.mediana.co.kr



Mediana US Company

Building 7/A, 2799 152nd Avenue NE, Redmond, WA 98052. USA
Tel : +1-425-406-2262

www.medianatech.com

The information contained in this document is subject to change without prior notice©
상기 기능은 변경될 수 있습니다.