



D500

Defibrillator / Monitor





Saving Lives Everyday!

D500

Defibrillator / Monitor

LCD
Waveform & Text display

colin NIBP

Temperature 1

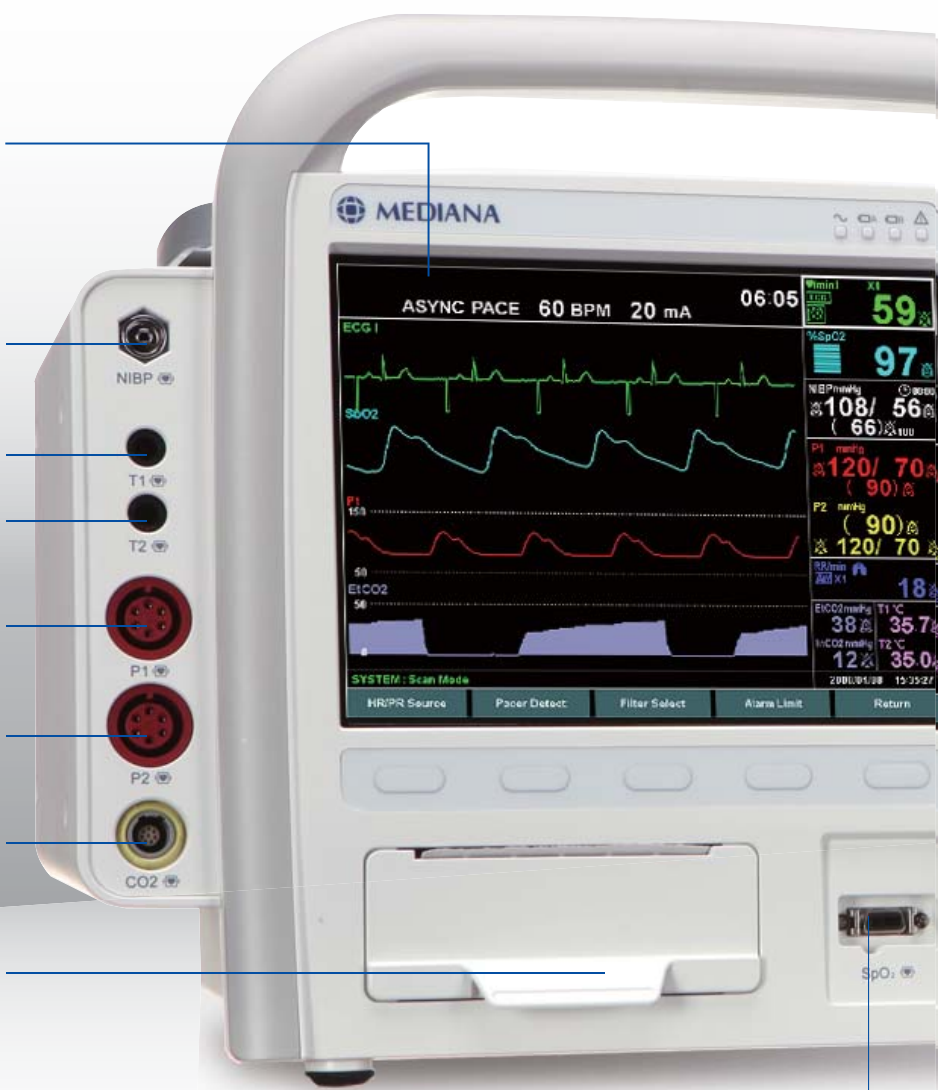
Temperature 2

IBP 1

IBP 2

RESPIRONICS
Capnography

Integrated Thermal Printer



Nellcor Oximax SpO2
Pulse Oximetry

*Menu in multi-language : English, Spanish, Russian, German, Polish, French, Portuguese, Czechich, Italian

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

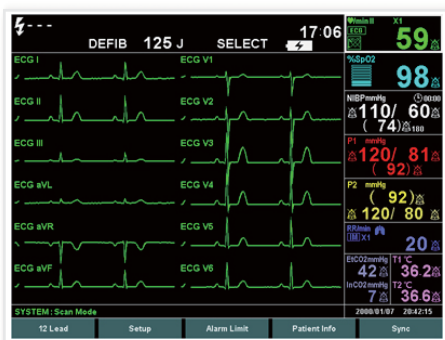


12 Lead ECG Glasgow Algorithm

Paddle (Pediatric & Adult)

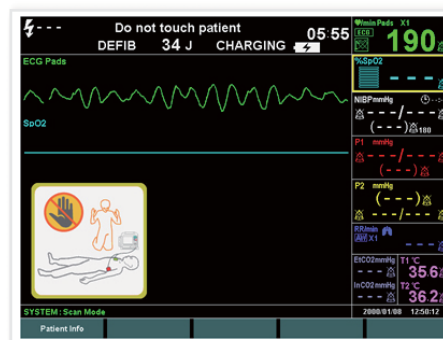


» Monitoring-12 Lead ECG Display



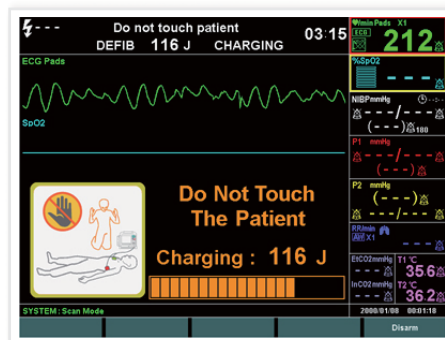
Full range of monitoring options available, including 3/5/12 Lead ECG (Glasgow University), Nellcor SpO2, Omron NIBP, IBP, Temp and Respironics EtCO2.

» AED



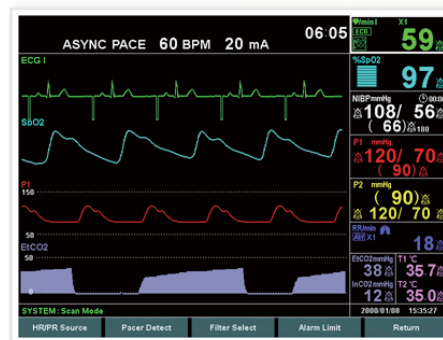
Semi-Automatic AED mode with easy to follow step-by-step visual and audio instructions.

» Manual Defibrillation



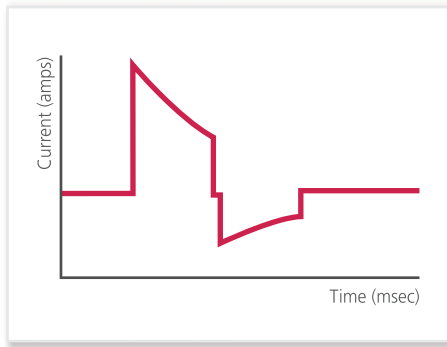
Biphasic Manual Defibrillation with maximum Energy level of 360 J. With Synchronous Cardioversion.

» 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

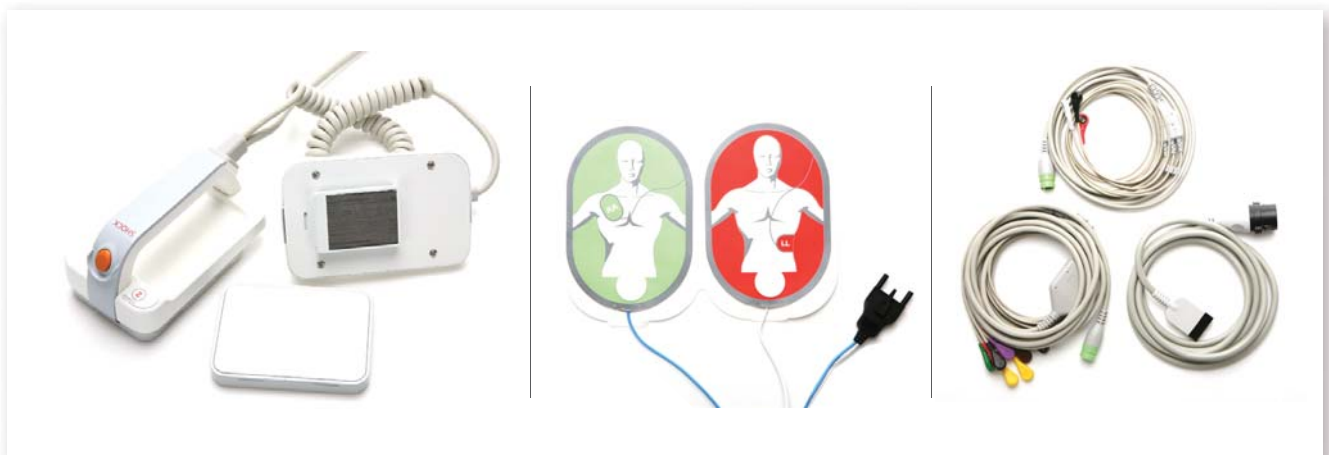


Device features an integrated Printer with 80 mm Paper Width that can print up to 3 Channels and Report / Patient information. 12 lead interpretive Analysis Report.

» 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	Impedance 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), clinical 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 Respirationics

Invasive Blood Pressure Monitoring (2 lines)

Wi-Fi/3G Communication module

Wireless LAN data transmission

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.



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