



Vitalmax 800 Plus

A. Mechanical Description

Size	4.25" H x 12.5" W x 10.25"D (10.8 cm x 31.75 cm x 26.04 cm)
Weight	15 lb.1.8 oz (6.85 kg)
Color	Beige and Aqua

B. Power Requirements

Operation	AC/DC
Internal battery	12V 7.0Ahr sealed lead-acid
Battery operating time	3 - 3.5 hours full charge
Battery charge time	16-20 hours
AC mains input	Universal Switching Power Supply, Hospital grade plug, 100-250 V/50-60 Hz 16VDC / 2.8A Output, UL, CSA, GS
Fuses	Two 3.0 A, 250 V, fast blow

C. Performance Specifications

1. ECG

CMRR	100 dB @60 Hz (common mode rejection ratio)
Heart rate range	30-240 bpm
Heart rate averaging	4 beat average
Heart rate accuracy	±5 bpm or 10%, whichever is greater
Response time of heart rate meter for a step change in heart rate	80-40 bpm less than 7 seconds. 80-120 bpm less than 11 seconds.
Pacemaker pulse rejection	Amp: ± 2 mV to ± 700 mV Duration: 0.1 ms to 2.0 ms
Input	3-Lead ECG / Respiration patient cable with no series resistance
Connector	AAMI 6-pin
Lead selection	I, II, III (Standard Config.)
ECG reference signal	1 mV/sig over
Patient isolation	Breakdown voltage: 5000 VRMS 60 seconds 60 Hz
Leakage current	
a) Internal to ground	< 0.01 mA (< 10 uA)
b) Enclosure	< 0.01 mA (< 10 uA)
c) Leads-off sensing current	< 10 uA
DC current	< 0.01 mA (< 10 uA)
Frequency response	0.5-40 Hz (±3 dB)
Band width	
Patient drive current	< 10 uA
Maximum T wave rejection capability	120% of QRS Segment
Defibrillator & ESIS protected	Tested with 5 kV
Recovery time following defibrillation	Within 8 seconds.
Lead fault alarm	Audible, visual
QRS indicator	Audible: user volume control Asystole: audible and visual
Gain selection	5 mV, 4 mV, 3 mV, 2 mV, 1 mV
Time to alarm tachycardia	3 seconds
Aspect ratio	0.24, 0.4, 0.6, ±0.08 sec/mV
Alarm frequency	Low alarm 20 - 24 Hz High alarm 30 - 34 kHz
ECG input impedance	>2.5 M Ohm @ 10 Hz

2. ECG/ Thoracic Impedance Respiration

Excitation current	<100 uA
Excitation frequency	65 kHz
Maximum allowable electrode impedance	2 K ohm
Size adjustment	User selectable
Respiration rate range	4-99 rpm (respirations per minute)
Respiration rate accuracy	± 2 rpm
Respiration rate averaging	4 breath average
Respiration alarm limits	Upper 4-99 rpm Lower 4-98 rpm
Sensitivity range	Adult: 0.3-10 Ohms Neonate: 0.1-10 Ohms
Apnea	Audible and visual alarm in less than 20 seconds. Not recommended for apnea monitoring.
Sensing electrodes	RA and LA
Lead Selection	I, II, III

3.END-TIDAL CO₂, inCO₂(min) and RESPIRATION

Type	Side stream, infrared
Method	CO ₂ sample line with nasal cannula or endotracheal tube connector
CO ₂ averaging	4 breaths or breath-to-breath
CO ₂ range	0-99 mmHg adult/pediatric (0-13.2 kPa)
CO ₂ accuracy	± 2 mmHg (0-40 mmHg)[± 0.27 kPa (0-5.33 kPa)] ± 5% of reading [(40-99 mmHg)(5.33-13.2 kPa)]
Rise time	≤ 300 ms 10% to 90% Co ₂
Oo ₂	
CO ₂ calibration	Manual with room air, and 10% CO ₂ every six months
Sample aspiration rate	75 ml/min ±10 ml
Sample line purging	Automatic
Water trap	Disposable, Volume 4 cc
Respiration range	4-99 rpm (respirations per minute) adult/pediatric
Respiration rate accuracy	± 2 rpm
Analog output	Optional
Alarm limits	Respiration Upper 4-99 rpm Lower 4-98 rpm ETCO ₂ Upper 0-99 mmHg (13.2 kPa) Lower 0-98 mmHg InCO ₂ Upper 0-99 mmHg (0-13.2 kPa) Lower 0-98 mmHg
Alarm volume	Fixed

4. INVASIVE PRESSURE

Channels	Two
Measurement range	-30 mmHg to +300 mmHg (-4.0 kPa to 40.0 kPa)
Waveform Span	Adjustable to 30, 60, 90, 120, 180 or 300m
Pressure offset	Adjustable in steps of 10 mmHg
Gain accuracy	± 1% or ± 2 mmHg whichever is greater (± 0.27 kPa)
Analysis value	Maximum, minimum, and mean pressure Pulse rate from arterial waveforms
Heart rate range	10-250 bpm
Heart rate accuracy	± 1% or ± 5 bpm, whichever is greater
Heart rate alarm limits	Upper 0-250 bpm Lower 0-249 bpm
Transducer sensitivity	5 uV/V/mmHg
Transducer excitation	5V DC
Transducer zero adjust	± 150 mmHg (± 19.99 kPa)
Transducer auto-zeroed on pressing the zero-adjust button	

Band width	Upper band limit: Factory selectable: 8, 9, 10, 12, 14, 16, 19, 22, 25, 30, 35, 40 Hz
Hz	Default: 14 Hz Lower band limit: DC
Display	Digital waveform display with semiautomatic and manual scaling Trend display of pressure waveforms
Alarms	Audio and Visua User adjustable upper and lower alarm limits
User selectable pressure channel labels	IP1(2), ART1(2), AO1(2), CVP1(2), FIA1(2)
Alarm limits	Max IP (Systolic): Upper -30 to 300 mmHg (-4.0 to 40 kPa) Lower -30 to 299 mmHg (-4.0 to 39.9 kPa) Min IP (Diastolic): Upper -30 to 300 mmHg (-4.0 to 40 kPa) Lower -30 to 299 mmHg (-4.0 to 39.9kPa) Mean IP Upper -30 to 300 mmHg (-4.0 to 40 kPa) Lower -30 to 299 mmHg (-4.0 to 39.9 kPa)

5. PULSE OXIMETRY (SpO2)

Saturation range	0-100%, adult/pediatric/neonate
Saturation averaging	8 beat average
Saturation accuracy	± 2% (70-100%), ±3% (50-69%), (0-49% unspecified)
Saturation alarm limits	Upper: 0-100% Lower: 0-99%
Pulse rate range	30 - 254
Pulse rate averaging	8 second average
Pulse rate accuracy	± 2 % @ 30 - 100 bpm
Pulse alarm limits	Upper: 0-250 bpm Lower: 0-249 bpm
Pulse tone	Pitch adjusts to SpO2 value Volume adjustable
Pulse rate display	Waveform, digital, pulse amplitude
Sensor types	Finger, Universal "Y", ear lobe clip Disposable and reusable wrap probes

6. NON-INVASIVE BLOOD PRESSURE (NIBP)

Method	Automatic oscillometric
Parameters measured	Systolic, diastolic, mean arterial pressure, pulse
Scale	mmHg or kPa
Operating modes	Manual, Automatic, Stat
Repeat cycles	10-50 seconds; 1-99 minutes
Rapid cycle update	1-4 minutes (STAT mode)
Measurement range	Systolic: Adult/pediatric 30-250 mmHg (4.0-33.3 kPa) Neonate 20-160 mmHg (2.7-21.3 kPa) Diastolic: Adult/pediatric 10-180 mmHg (1.3-24.0 kPa) Neonate 10-140 mmHg (1.3-18.7 kPa)
Measurement time	Typical 50 seconds Maximum 120 seconds Typical Stat 30 seconds
Cuff inflation rate	Not greater than 40-50 mmHg/sec (5.33-6.66 kPa/sec)
Cuff inflation pressure	30 mmHg above last systolic (4.0 kPa)
Cuff pressure range	Adult/pediatric 0-250 mmHg (0-33.3 kPa) Neonate 0-140 mmHg (0-18.7 kPa)
Initial cuff inflation	Adult/pediatric 170 ± 10 mmHg (22.7 ± 1.3 kPa) Neonate 120 ± 10 mmHg (16.0 ± 1.3 kPa)
Auto deflate pressure	Adult/pediatric 280 mmHg; ± 5 mmHg (36.7-38.0 kPa) Neonate 235 mmHg; ± 5 mmHg (30.7-32.0 kPa)

NIBP display accuracy
NIBP alarm limit

± 3 mmHg (0.4 kPa)
Systolic: Upper 0-255 mmHg (0-34.0 kPa)
Lower 0-254 mmHg (0-33.9 kPa)
Diastolic: Upper 0-255 mmHg (0-34.0 kPa)
Lower 0-254 mmHg (0-33.9 kPa)
Mean: Upper 0-255 mmHg (0-34.0 kPa)
Lower 0-254 mmHg (0-33.9 kPa)

Pulse rate determinations
Pulse rate averaging
Pulse rate accuracy

30-254 bpm
4 beat aver
±3 bpm @ 40-120 bpm
±10 bpm @ 121-200 bpm

Pulse rate alarm limits

Upper 0-250 bpm
Lower 0-254 bpm

Cuffs

Reusable and disposable cuffs
Neonate, infant, pediatric, standard adult, large adult,
thigh, with 6 foot air hose

7. TEMPERATURE

Temp scale
Temp range
Temp accuracy
Temp alarm limits

°F or °C
82.4-109.8°F (28.0-43.2°C)
± 0.2°F (± 0.1°C)
Upper 83.0-110.0°F (28.3-43.3°C)
Lower 83.0-109.9°F (28.3-43.2°C)

D Temp range
D Temp alarm limits

0°-27°F (0-15C)
Upper 0-27F (0-15C)
Lower 0-26.9F (0-14.9C)

Temp probes

Skin or rectal/esophageal
YSI™ 400 Series compatible: for use with invasive pressure models only
Medtronics™/ Electromedics 2100 Series™ compatible: for use with
non-invasive pressure models only

D. Display

Waveform
Matrix
Effective display area
Signal Indicators

Vacuum Fluorescent
256 pixels (Horizontal) x 64 pixels (Vertical)
102.3 mm (Horizontal) x 25.5 mm (Vertical)
Green and Yellow signal LED

E. Printer

Type
Print mode
Waveforms
Resolution
Waveform annotations

Multi-channel array recorder/printer
Text or waveform
Real time or alarm-triggered (10, 15, 20, or 30 seconds)
200 dpi vertical; 400-800 dpi horizontal
Time, date, speed, channel identification, waveform lead selection

F. Environmental Specifications

Temperature
Relative humidity

Operating: 66°F - 86°F (19°C - 30°C)
Storage 40°F - 110°F (4.4 C - 43.3°C)
Operating: 20-80% (non-condensing)
Storage 10-90% (non-condensing)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.