VS 9 VITAL SIGN MONITOR

Technical Specifications



Physical Specifications

Dimension:	10.8" (H) x 7.3" (W) x 5.3 (D)" 27.5 cm (H) x 18.5 cm (W) x 13.5 cm (D)
Weight:	7.5 lbs (3.4 kg) (with Masimo SpO_2, NIBP, recorder, and a battery; without accessories.)
Screen:	10.1-inch, 1280 x 800 pixels standard capacitive touchscreen support multi-touch operation

TrueBP™ NIBP

Meet standards of ISO 80601-2-30.

Technique:	Oscillometry, support inflation and deflation	
Operation Mode:	Manual, Auto, STAT, Sequence, and BP averaging	
Parameters:	Systolic, Diastolic, Mean	
Typical Measurement Time:	≤ 15 s (Inflation algorithm, with CM1303/ CM1503 cuff, PR within 60 to 200 bpm and systolic pressure within 80 to 120 mmHg)	
Max Measurement Time:	Adult/Pediatric: 180 s, Neonate: 90 s	
Systolic Range:	Adult:	25 to 290 mmHg
	Pediatric:	25 to 240 mmHg
	Neonate:	25 to 140 mmHg
Diastolic Range:	Adult:	10 to 250 mmHg
	Pediatric:	10 to 200 mmHg
	Neonate:	10 to 115 mmHg
Mean Range:	Adult:	15 to 260 mmHg
	Pediatric:	15 to 215 mmHg
	Neonate:	15 to 125 mmHg
Accuracy:	Max mean error: ± 5 mmHg Max standard deviation: 8 mmHg	
NIBP Resolution:	1 mmHg	
Assisting Venous Puncture:	Yes	

SpO_2

Meet standards of ISO 80601-2-61.

Module:	Masimo, Nellcor
Range	
Nellcor:	0 to 100%
Masimo:	1 to 100%
Resolution:	1%
Accuracy	
Nellcor:	±2 % (70 to 100%, Adult/Pediatric:) ±3 % (70 to 100%, Neonate) Unspecified (0 to 69%)
Masimo:	±2 % (70 to 100%, Adult/Pediatric, non-motion) ±3 % (70 to 100%, Neonate, non-motion) ±3 % (70 to 100%, motion) Unspecified (1 to 69%)
Perfusion Indicator (PI)	Yes, for Masimo SpO_2
Pitch Tone:	Yes
Refresh Rate:	≤ 1 s

PR

PR Range:	20 to 300 bpm (from Nellcor SpO_2) 25 to 240 bpm (from Masimo SpO_2) 30 to 300 bpm (from NIBP)
Accuracy:	±3 bpm (20 to 250 bpm, from Nellcor SpO_2) ±3 bpm (non-motion, from Masimo SpO_2) ±5 bpm (motion, from Masimo SpO_2) ±3 bpm or ±3 %, whichever is greater (from NIBP)
Refreshing Rate:	≤ 1 s

SmarTemp™ Temperature

Meet standard of ISO 80601-2-56.

Technique:	Thermal resistance
Operating Mode:	Predictive mode, Monitor mode
Temp Range	
Predictive Mode:	34 to 43 °C (93.2 to 109.4 °F)
Monitor Mode:	25 to 44 °C (77 to 111.2 °F)
Temp Accuracy (Monitor Mode)	25 to 32 °C (not including 32 °C): ± 0.2 °C 32 to 44 °C (including 32 °C): ± 0.1 °C or 77 to 89.6 °F (not including 89.6 °F): ± 0.4 °F 89.6 to 111.2 °F (including 89.6 °F): ± 0.2 °F
Temp Resolution:	0.1 °C

Exergen TemporalScanner™ Thermometer

Temp Range:	15.5°C to 42.0 °C (60.0°F to 107.6°F)
Temp Accuracy:	±0.2 °C or ± 0.4 °F
Temp Resolution:	0.1 °C or 0.1 °F

CO_2

Meet standard of ISO 80601-2-55.

Technique Infrared absorption	
Sample flow Rate:	50 ml/min (With Oridion Sampling line)
Sample Flow Rate Tolerance:	±15 ml/min or ±15 %, whichever is greater.
Response Time:	≤ 5.0 s With an Oridion standard sampling line
Sweep Speed:	3 mm/s, 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
CO_2 Range:	0-150 mmHg
CO_2 Accuracy	
Full Accuracy Mode:	0 - 40 mmHg: ± 2 mmHg 41 - 76 mmHg: ± 5% of reading 77 - 99 mmHg: ± 10% of reading 100 to 150 mmHg: ± (3mmHg + 8% of reading)
ISO Accuracy Mode:	Add ±2 mmHg to the full accuracy mode
CO_2 Resolution:	1 mmHg
awRR Range:	0 to 150 rpm
awRR Accuracy:	±1 rpm (0 to 59 rpm) ±2 rpm (60 to 150 rpm)
Apnea Time:	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Manual Input

Support up to 30 manual input parameters (customizable)

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Data Review

Trends Data

Spot Check Mode:	Up to 5000 groups
Continuous Mode:	Up to 240 hours @ 30 seconds
Events:	Up to 200 events

Alarms

Audible Indicator:	3 different alarm tones, and prompt tone
Visible Indicator :	Red/yellow/cyan LED, and alarm message display

Provide AlarmSight infographic alarm indicator.

Clinical Assistive Application (CAA):

MEWS, GCS, Pain score, Targeted Goal View, Orthostatic BP Measurement.

Blue Tooth

Protocol:	Bluetooth 5
Modulation Mode:	GFSK
Operating Frequency:	2402 MHz to 2480 MHz
Wireless Data Rate:	2 Mbps, 1 Mbps, 125 kbps
Output Power:	≤ 8 dBm ± 4 dB
Data Security:	AES128

Wi-Fi Communications

Protocol:	IEEE 802.11a/b/g/n/ac
Modulation Mode:	BPSK, QPSK, 16QAM, 64QAM, 256QAM
Operating Frequency:	2412 MHz to 2472 MHz 5180 MHz to 5320 MHz 5500 MHz to 5700 MHz 5745 MHz to 5825 MHz
Wireless Baud Rate:	IEEE 802.11a: 6 to 54 Mbps IEEE 802.11b: 1 to 11 Mbps IEEE 802.11g: 6 to 54 Mbps IEEE 802.11n: MCS0 to MCS7 IEEE 802.11ac: MCS0 to MCS8
Output Power:	< 20 dBm (CE requirement: detection mode- RMS) < 30 dBm (FCC requirement: detection mode- peak power)
Operating Mode:	Infrastructure
Data Security	
Standard:	WPA/WPA2-PSK, WPA/WPA2-Enterprise, WPA/WPA2 CCKM
EAP Method:	LEAP, EAP-TTLS, EAP-TLS, EAP-FAST, PEAPMsChapV2, PEAP-GTC, PEAP-TLS
Encryption:	TKIP and AES

Interfacing

Main Unit:	AC power connector (1) Network connector (1), RJ45 USB 2.0 connector (2) Multi-Functions connect (1) Equipotential grounding terminal (1) External battery connector (1)
Barcode Scanner:	Support 1D and 2D barcode
Thermal Recorder:	3 traces (paper 50 mm width, 20 m length)
Data Output:	HL7, eGateway, VitalsLink (Cerner™)
Auth. Management:	MLDAP, Imprivata™

Power

Line Voltage:	100 to 240 VAC (±10 %)
Current:	0.9 to 0.5A
Frequency:	50/60 Hz (±3 Hz)
Battery:	5600mAh rechargeable smart Li-ion battery
Run Time:	At least 8 hours when powered by a new, fully-charged battery at 25 °C ±5 °C on standard configuration (SpO_2 and NIBP), with SpO_2 sensor connected, auto NIBP measurements at an interval of 15 minutes, and screen brightness set to factory default.
Recharge Time (power off):	4 hours to 100%

Environmental requirements

Temperature

Operating:	0 to 40 °C (without CO_2) 5 to 40 °C (with CO_2)
Storage:	-20 to 60 °C

Humidity

Operating:	15 to 95 % (non condensing)
Storage:	10 to 95 % (non condensing)

Barometric

Operating:	120 to 805.5 mmHg (57 to 107.4 kPa) (without CO_2) 430 to 790 mmHg (57.3 to 105.3 kPa) (with CO_2)
Storage:	120 to 805.5 mmHg (16 to 107.4 kPa) (without CO_2) 430 to 790 mmHg (57.3 to 105.3 kPa) (with CO_2)

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