

MINDRAY VS 9



ABOUT

The Mindray VS 9 is a vital signs monitor designed for low-acuity care. It combines spot-check and continuous monitoring to support clinical decision-making and streamline hospital workflows. With capacitive touchscreen technology, like a smartphone, it incorporates a surprisingly new level of ease and speed. Featuring many intuitive tools and configurable workflow options to meet various clinical scenarios. The VS 9 is designed to be connected so clinicians can send vital signs at the point of care, improving efficiencies, and reducing errors.

FEATURES

Dual Monitoring Modes: Supports both spot-check and continuous monitoring.

Smartphone-Style Touchscreen: Features a fast, capacitive touchscreen interface.

Point-of-Care (POC) Connectivity: Sends patient vital signs directly to the EMR at the bedside.

Centralized Patient Views: Connects with the Mindray BeneVision Distributed Monitoring System (DMS)

Wireless Mobility: Integrates with your facility's shared wireless infrastructure.

Configurable Workflows: Offers flexible settings and clinical decision tools tailored to fit various departmental scenarios.



SPECIFICATIONS



DIMENSIONS

Height: ≤10.83 in (≤27.5 cm)

Width: 7.28 in (18.5 cm)

Depth: 5.31 in (13.5 cm)

Weight: 7.496 lb (≤3.4 kg)

POWER

AC Power Supply

Line Voltage: 100–240 VAC (±10%)

Current: 0.9–0.5 A

Frequency: 50/60 Hz (±3 Hz)

Fuse: T2AL-250V

BATTERY

Type: Rechargeable Lithium-Ion

Voltage: 10.8 VDC

Capacity: 5,600 mAh

Battery Runtime:

- At least 8 hours - standard configuration with SpO₂ and NIBP
- At least 5.3 hours - SpO₂, NIBP, SmarTemp, Wi-Fi, and barcode scanner
- At least 4 hours - SpO₂, NIBP, CO₂, Wi-Fi, and recorder

Charge Time:

- **Monitor off/standby:** ≤4 hours to 100%
- **Monitor powered on:** ≤12.5 hours to 100%

Shutdown Delay: At least 20 minutes after the first low-battery alarm

DISPLAY

Screen Type: Color TFT LCD

Screen Size: 8 inches diagonal

Resolution: 1024 × 768 pixels

RECORDER

Recording Method: Thermal dot array

Paper Speed: 25 mm/s

MONITOR INTERFACE

AC Power Input: 1 connector

Wired Network: 1 × RJ45 connector

USB: 2 × standard USB 2.0 Type-A connectors

Equipotential Grounding Terminal: 1

Multi-Functions Connector: 1

External Battery Connector: 1

Nurse Call Signal:

- **High level:** 3.5–5 V ±5%
- **Low level:** <0.5 V
- **Rising/falling time:** ≤1 ms

Alarm Output: Available through the network connector

SPECIFICATIONS



WIFI SPECIFICATIONS

Standards: IEEE 802.11a/b/g/n/ac

Modulation Mode: BPSK, QPSK, 16QAM, 64QAM, 256QAM

Operating Frequency: 2412–2472 MHz; 5180–5320 MHz; 5500–5700 MHz; 5745–5825 MHz

Wireless Data Rate:

- **IEEE 802.11a:** 6–54 Mbps
- **IEEE 802.11b:** 1–11 Mbps
- **IEEE 802.11g:** 6–54 Mbps
- **IEEE 802.11n:** MCS0–MCS7
- **IEEE 802.11ac:** MCS0–MCS8

Output Power: <20 dBm (CE requirements); <30 dBm (FCC requirements)

Working Mode: Infrastructure

Data Security: WPA/WPA2-PSK, WPA/WPA2-Enterprise, WPA/WPA2 CCKM

Encryption: TKIP and AES

BLUETOOTH SPECIFICATIONS

Protocol: Bluetooth 5

Modulation Mode: GFSK

Operating Frequency: 2402–2480 MHz

Wireless Data Rate: 2 Mbps, 1 Mbps, 125 kbps

Output Power: ≤8 dBm ±4 dB

Data Security: AES128

SPO₂ SPECIFICATIONS

Mindray SpO₂ Module

Measurement Range: 0–100%

PI Measurement Range: 0.05–20%

SpO₂ Resolution: 1%

PI Resolution:

- PI <10.0: 0.01
- PI ≥10.0: 0.1

Accuracy:

- **70–100%:** ±2% ABS (adult/pediatric)
- **70–100%:** ±3% ABS (neonate)
- **0–69%:** Not specified

Refreshing Rate: ≤1 second

Response Time: <30 seconds under specified normal-perfusion conditions

Standard: ISO 80601-2-61

Masimo SpO₂ Module

Measurement Range: 1–100%

PI Measurement Range: 0.02–20%

SpO₂ Resolution: 1%

PI Resolution:

- PI <10.0: 0.01
- PI ≥10.0: 0.1

Accuracy:

- **70–100%:** ±2% ABS without motion, adult/pediatric
- **70–100%:** ±3% ABS without motion, neonate
- **70–100%:** ±3% ABS with motion
- **1–69%:** Not specified

Refreshing Rate: ≤1 second

Response Time: ≤20 seconds under specified normal-perfusion conditions

SpO₂ Averaging Time: 2–4 s, 4–6 s, 8 s, 10 s, 12 s, 14 s, or 16 s

Low Perfusion SpO₂ Accuracy: ±2%

Standard: ISO 80601-2-61

SPECIFICATIONS



Nellcor SpO₂ Module

Measurement Range: 0–100%

Resolution: 1%

Accuracy:

- **70–100%:** $\pm 2\%$ ABS (adult/pediatric)
- **70–100%:** $\pm 3\%$ ABS (neonate)
- **0–69%:** Not specified

Refreshing Rate: ≤ 1 second

Response Time: ≤ 30 seconds under specified normal-perfusion conditions

Low Perfusion Accuracy: $\pm 2\%$

Standard: ISO 80601-2-61

PR (PULSE RATE)

Mindray SpO₂ Module

Measurement Range: 20–300 bpm

Resolution: 1 bpm

Accuracy: ± 3 bpm

Response Time: < 30 seconds

Refreshing Rate: ≤ 1 second

Masimo SpO₂ Module

Measurement Range: 25–240 bpm

Resolution: 1 bpm

Accuracy: ± 3 bpm without motion; ± 5 bpm with motion

Low Perfusion Accuracy: ± 3 bpm

Response Time: ≤ 20 seconds

Refreshing Rate: ≤ 1 second

Nellcor SpO₂ Module

Measurement Range: 20–300 bpm

Resolution: 1 bpm

Accuracy: ± 3 bpm from 20–250 bpm; 251–300 bpm not specified

Response Time: ≤ 30 seconds

Refreshing Rate: ≤ 1 second

PR from NIBP Module

Measurement Range: 30–300 bpm

Resolution: 1 bpm

Accuracy: ± 3 bpm or $\pm 3\%$, whichever is greater

NIBP (NON-INVASIVE BLOOD PRESSURE)

Standards: IEC 80601-2-30; ISO 81060-2

Technique: Oscillometry

Operating Modes: Manual, Auto, STAT, Sequence, and BP Averaging

Auto Measurement Intervals: 1 min, 2 min, 2.5 min, 3 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 1.5 hr, 2 hr, 3 hr, 4 hr, 8 hr

STAT Cycle Time: 5 minutes

Typical Measurement Time: ≤ 15 seconds for adult and pediatric patients under specified test conditions

Maximum Measurement Time:

- Adult/Pediatric: 180 seconds
- Neonate: 90 seconds

Heart Rate Range: 30–300 bpm

Systolic Measurement Range:

- Adult: 25–290 mmHg
- Pediatric: 25–240 mmHg
- Neonate: 25–140 mmHg

Diastolic Measurement Range:

- Adult: 10–250 mmHg
- Pediatric: 10–200 mmHg
- Neonate: 10–115 mmHg

Mean Measurement Range:

- Adult: 15–260 mmHg
- Pediatric: 15–215 mmHg
- Neonate: 15–125 mmHg

Accuracy: Maximum mean error ± 5 mmHg; maximum standard deviation 8 mmHg

Static Pressure Measurement Range: 0–300 mmHg

Static Pressure Accuracy: ± 3 mmHg

Resolution: 1 mmHg

SPECIFICATIONS



Software Overpressure Protection:

- Adult: 297 ±3 mmHg
- Pediatric: 297 ±3 mmHg
- Neonate: 147 ±3 mmHg

Hardware Overpressure Protection:

- Adult: ≤330 mmHg
- Pediatric: ≤330 mmHg
- Neonate: ≤165 mmHg

TEMPERATURE SPECIFICATIONS

SmarTemp Temperature Module

Standard: ISO 80601-2-56

Technique: Thermal resistance using a thermistor

Operating Modes: Adjusted/predictive mode and direct/monitor mode

Measurement Range:

- Monitor Mode: 25–44 °C (77–111.2 °F)
- Predictive Mode: 34–43 °C (93.2–109.4 °F)

Monitor Mode Accuracy:

- 25–32 °C: ±0.2 °C
- 32–44 °C: ±0.1 °C
- Resolution: 0.1 °C

Minimum Measurement Time:

- Monitor Mode: <60 seconds
- Predictive Mode: <20 seconds
- Typical predictive test: <12 seconds

GENIUS 3 TETHERED TYMPANIC THERMOMETER

Operating Mode: Adjusted mode

Measurement Range: 33.0–42.0 °C (91.4–107.6 °F)

Accuracy: ±0.3 °C

EXERGEN TEMPORALSCANNER THERMOMETER

Measurement Range: 16.0–43.0 °C

Accuracy: ±0.2 °C

Resolution: 0.1 °C

Battery: 9 V alkaline

Battery Runtime: Approximately 1 hour continuous use or 15,000 readings

HETAIDA INFRARED THERMOMETER

Measurement Range: 34.0–42.9 °C

Accuracy:

- 34.0–34.9 °C: ±0.3 °C
- 35.0–42.0 °C: ±0.2 °C
- 42.1–42.9 °C: ±0.3 °C

CO₂ SPECIFICATIONS

Standard: ISO 80601-2-55

Technique: Infrared absorption

Apnea Delay: 10, 15, 20, 25, 30, 35, or 40 seconds

Measurement Range: 0–150 mmHg

Accuracy — Full Accuracy Mode:

- 0–40 mmHg: ±2 mmHg
- 41–76 mmHg: ±5% of reading
- 77–99 mmHg: ±10% of reading
- 100–150 mmHg: ±(3 mmHg + 8% of reading)
- 150 mmHg: Unspecified

ISO Accuracy Mode: Add ±2 mmHg to full accuracy mode

Resolution: 1 mmHg

Sample Flow Rate: 50 mL/min with Oridion sampling line

Sample Flow Rate Tolerance: ±15% or ±15 mL/min, whichever is greater

Start-Up Time: 20 seconds typical; 90 seconds maximum

Response Time: ≤5 seconds with standard sampling line; ≤6.5 seconds with extended sampling line

Rise Time: ≤250 ms with standard sampling line; ≤280 ms with extended sampling line

SPECIFICATIONS



RR (RESPIRATORY RATE) ---

RR from Mindray CO₂ Module

Measurement Range: 0–150 rpm

Precision:

- <60 rpm: ± 1 rpm
- 60–150 rpm: ± 2 rpm

Resolution: 1 rpm

RR from Mindray SpO₂ Module

Measurement Range: 4–70 rpm

Precision: Arms ≤ 3 rpm; mean difference $[-1, 1]$ rpm

Resolution: 1 rpm

Time for First Measurement: ≤ 30 seconds

Refreshing Rate: ≤ 1 second