

Rad-87™

Upgradable rainbow® technology in a versatile, easy-to-use bedside monitor



Choose the noninvasive measurements that are right for your clinical setting— oxygen saturation, pulse rate, and perfusion index in addition to total haemoglobin, total arterial oxygen content, pleth variability index, carboxyhaemoglobin, methaemoglobin, and respiration rate

Masimo Rad-87



- > Featuring "gold-standard" Masimo SET® pulse oximetry, proven in more than 100 independent and objective studies to provide the most accurate and reliable SpO₂ readings during motion and low perfusion.
- > Upgradable Masimo rainbow® SET technology platform lets you add total haemoglobin (SpHb®) and total arterial oxygen content (SpOC™) through simple field-installed software upgrades.
- > Additional upgrades allow you to continuously and noninvasively measure carboxyhaemoglobin (SpCO®), methaemoglobin (SpMet®), Pleth Variability Index™, and respiration rate (RRa™).

CUSTOM CONFIGURATION OPTIONS:



Alarm access allows you to instantly access, view, or modify alarm settings at the bedside.

Choose APOD™, Normal, or Max sensitivity with the touch of a button and verify settings at a glance.

In addition to SpO₂ and pulse rate, the Rad-87 allows you to select and display either SpHb, PVI or RRa on the main screen, with additional measurements displayed on subsequent screens accessed with the press of a button.



> The Rad-87 features a built-in 802.11 radio, allowing for bidirectional wireless communication with Masimo Patient SafetyNet™, the remote monitoring and clinician notification system that helps you keep patients safe on general care floors.

FEATURES:

- > A simple, user-centered design allows activation of many features with only a single touch.
- > Easy-to-read, high-contrast display eliminates confusion common with many bedside monitors.
- > One platform, multiple measurements—all rainbow measurements can be displayed on the Rad-87.
- > Alarms and alerts can be modified at the bedside or via the Masimo Patient SafetyNet Remote Monitoring and Clinician Notification System.
- > Perfusion Index (PI) with trending capability indicates arterial pulse signal strength and may identify patient compromise.
- > Compatible with Phillips Vuelink™ device interface module.
- > Adaptive Threshold Alarm™ option may reduce alarm fatigue by dynamic adjustment of the audio alarms to the patient's baseline value and the fixed alarm threshold.¹
- > Signal IQ® provides signal identification and quality indication during excessive motion and low signal-to-noise situations.
- > Compatible with 802.11a/b/g.

AT-A-GLANCE DISPLAYS:

The Top-side LCD Display: confirms changes to clinical settings of the device and, when used as part of Patient SafetyNet, displays patient information.

Wireless Connectivity Indicator: provides easy verification of network connection when used as part of Patient SafetyNet.

Device Profile Indicator: color-coded indicator lets users instantly verify device is configured correctly for their care area.

The System Status Indicator: provides a visual indication of alarm and data-collection alerts, even when parameter display screen is not visible to clinician.



¹ Not FDA 510(K) cleared.

PERFORMANCE

Measurement Range

SpO ₂	0 – 100%
SpMet	0 – 99.9%
SpCO	0 – 99%
SpHb	0 – 25 g/dL
SpOC	0 – 35 ml of O ₂ /dL of blood
Pulse Rate	25 – 240 bpm
Perfusion Index	0.02 – 20%
PVI	0 – 100%
RRa	0 – 70 breaths per minute

Oxygen Saturation Accuracy SpO₂

Saturation	60 – 80%
No Motion	
Adults/Infants/Paediatrics	± 3%
Saturation	70 – 100%
No Motion	
Adults/Infants/Paediatrics	± 2%
Neonates	± 3%
Motion	
Adults/Infants/Paediatrics/Neonates	± 3%
Low Perfusion	
Adults/Infants/Paediatrics/Neonates	± 2%

Pulse Rate Accuracy

Pulse Rate	25 – 240 bpm
No Motion	
Adults/Infants/Paediatrics/Neonates	± 3 bpm
Motion	
Adults/Infants/Paediatrics/Neonates	± 5 bpm
Low Perfusion	
Adults/Infants/Paediatrics/Neonates	± 3 bpm

Carboxyhaemoglobin Saturation Accuracy (%SpCO)¹

Adults/Infants/Paediatrics	1 – 40% ± 3%
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Methaemoglobin Saturation Accuracy (%SpMet)¹

Adults/Infants/Paediatrics/Neonates	1 – 15% ± 1%
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Total Haemoglobin accuracy (SpHb g/dL)²

Adults/Paediatrics	8 – 17 g/dL ± 1 g/dL
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Respiration Rate Accuracy

Adults	4 – 70 ± 1 breaths per minute
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Resolution

Oxyhaemoglobin Saturation (%SpO ₂)	1%
Carboxyhaemoglobin Saturation (%SpCO), Digital Display	1%
Methaemoglobin Saturation (%SpMet), Digital Display	0.1%
Total Haemoglobin (SpHb g/dL)	0.1 g/dL
Pulse Rate (bpm)	1 bpm

Electrical

AC Power Requirements	100-240 VAC, 47-83 Hz
Power Consumption	15 VA Max

Batteries

Type	Sealed lead acid
Capacity (battery life)	up to 4 hours ³
Charging Time	8 hours

Environmental

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-40°C to +70°C (-40°F to 158°F)
Operating Humidity	5% to 95%, noncondensing
Operating Altitude	500 mbar to 1060 mbar pressure -304 m to 5,486 m (-1000 ft to 18,000 ft)

Physical Characteristics

Dimensions	20.8 cm x 15.2 cm x 7.6 cm (8.2" x 6.0" x 3.0")
Weight	2.1 lbs = .908 kg = 32 oz
Trending	72 hours of trending at 2-second resolution

Modes

Averaging Mode	2, 4, 8, 10, 12, 14, or 16 seconds
Sensitivity	APOD, FastSat, Normal, and Max

Alarms

High/low audible and visual alarms for parameters (SpO ₂ range 1 – 99% then "---", SpHb range 0.1 – 24.5 g/dL then "---" SpCO, range 1 – 99% then "---", SpMet range 1 – 99% then "---", pulse rate range 25 – 240 bpm), sensor condition, system failure and low battery alarms	
Alarm Volume Range	45 – 85 db

Display/Indicators

Data Display: %SpO ₂ , %SpMet, %SpCO, SpHb g/dL, SpOC ml/dl, PVI, wireless, sensitivity, patient status light, device profile light, pulse rate, alarm status, alarm silenced status, AC power, Signal IQ / pleth bar, perfusion index bar, battery status, no sensor, sensor off	
Display Language	English (default)
APOD, Normal, and Max	LED

Output Interface

1) Serial RS-232	
2) Nurse Call	
3) Wireless Radio (if installed)	802.11 a/b/g
4) Patient SafetyNet, RadNet, Philips Vuelink	

Compliance

Safety Standard for Medical Equipment	IEC 60601-1 2nd Edition UL 60601-1 CAN/CSA C22.2 No. 601-1 JIS T 6061-1
Type of Protection	Class 1 (AC Power) Internally Powered (Battery Power)
Degree of Protection (Pulse CO-Oximeter Cable)	Type BF, Defib Proof (Applied-Part)
Mode of Operation	Continuous
EMC Standard	60601-1-2

Radio

USA	FCC ID VKF-Rad87 FCC Parts 15.247 and 15.407
Canada	IC ID 7362A-Rad87 RSS-210
Europe	EN 300328 EN 301893 EN 301489-17

¹ SpO₂, SpCO, and SpMet accuracy was determined by testing healthy adult volunteers in the range of 60% - 100% SpO₂, 0% - 40% SpCO, and 0% - 15% SpMet against a laboratory CO-Oximeter. SpO₂ and SpMet accuracy was determined on 16 neonatal NICU patients ranging in age from 7 to 135 days old and weighing between 0.5 and 4.25 kgs. Seventy-nine (79) data samples were collected over a range of 70 - 100% SaO₂ and 0.5 - 2.5% HbMet with a resultant accuracy of 2.9% SpO₂ and 0.9% SpMet. Contact Masimo for testing specifications.

² SpHb accuracy has been validated on healthy adult male and female volunteers and on surgical patients with light to dark skin pigmentation in the range of 8 g/dL to 17 g/dL SpHb against a laboratory CO-Oximeter. The variation equals plus or minus one standard deviation which encompasses 68% of the population. The SpHb accuracy has not been validated with motion or low perfusion.

³ This represents approximate runtime at the lowest indicator brightness and pulse tone turned off using a fully charged battery without radio power.