

# Masimo 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 hemoglobin, total arterial oxygen content, PVI, carboxyhemoglobin, and methemoglobin

# 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 SpO<sub>2</sub> readings during motion and low perfusion.
- > Upgradable Masimo Rainbow SET technology platform lets you add total hemoglobin (SpHb™) and total arterial oxygen content (SpOC™) through simple field-installed software upgrades.
- > Additional upgrades allow you to continuously and noninvasively measure carboxyhemoglobin (SpCO®), methemoglobin (SpMet®), and PVI™.

## CUSTOM CONFIGURATION OPTIONS:



In addition to SpO<sub>2</sub> and pulse rate, the Rad-87 allows you to select and display either SpHb or PVI on the main screen, with additional measurements displayed on subsequent screens accessed with the press of a button.



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.

## BUILT-IN RADIO FOR WIRELESS COMMUNICATION WITH MASIMO PATIENT SAFETNET:



- > The Rad-87 features a built-in radio for bidirectional wireless communication with Masimo Patient SafetyNet, the remote monitoring and clinician notification system that helps you keep at-risk 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 enabled 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 be used as a diagnostic tool during low perfusion.
- > Signal IQ™ provides signal identification and quality indication during excessive motion and low signal to noise situations.
- > Compatible with Phillips Vuelink™ device interface module.
- > Compatible with 802.11a/b/g.

## AT-A-GLANCE DISPLAYS:



## PERFORMANCE:

### MEASUREMENT RANGE

SpO <sub>2</sub> .....	0 – 100%
SpMet .....	0 – 99.9%
SpCO .....	0 – 99%
SpHb .....	0 – 25 g/dL
SpOC .....	0 – 35 ml of O <sub>2</sub> /dl of blood
Pulse Rate .....	25 – 240 bpm
Perfusion Index .....	0.02 – 20%
PVI .....	0 – 100%

### OXYGEN SATURATION ACCURACY SpO<sub>2</sub>

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

### PULSE RATE ACCURACY

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

### CARBOXYHEMOGLOBIN SATURATION ACCURACY (%SpCO)\*

Adults/Infants/Pediatrics .....	1 – 40% ± 3%
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### METHEMOGLOBIN SATURATION ACCURACY (%SpMet)\*

Adults/Infants/Pediatrics/Neonates .....	1 – 15% ± 1%
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### TOTAL HEMOGLOBIN ACCURACY (SpHb g/dL)

Adults/Pediatrics .....	.8 – 17 g/dL ± 1 g/dL
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### RESOLUTION

Oxyhemoglobin Saturation (%SpO <sub>2</sub> ) .....	1%
Carboxyhemoglobin Saturation (%SpCO), digital display .....	1%
Methemoglobin Saturation (%SpMet), digital display .....	0.1%
Total Hemoglobin (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**
Charging time .....	8 hours

### ENVIRONMENTAL

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

### PHYSICAL CHARACTERISTICS

Dimensions .....	8.2" x 6.0" x 3.0" (20.8 cm x 15.2 cm x 7.6 cm)
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 <sub>2</sub> 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 <sub>2</sub> , %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

\* SpO<sub>2</sub>, SpCO, and SpMet accuracy was determined by testing healthy adult volunteers in the range of 60% - 100% SpO<sub>2</sub>, 0% - 40% SpCO, and 0% - 15% SpMet against a laboratory CO-Oximeter. SpO<sub>2</sub> 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% SaO<sub>2</sub> and 0.5 - 2.5% HbMet with a resultant accuracy of 2.9% SpO<sub>2</sub> and 0.9% SpMet. Contact Masimo for testing specifications.

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