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 SET® rainbow

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_2 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_2 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.

> 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:

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.

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%

OXYGEN SATURATION ACCURACY SpO$_2$
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%

METHEMOGLOBIN SATURATION ACCURACY (%SpMet)*
Adults/Infants/Pediatrics/Neonates . . . . 1 – 15% ± 1%

TOTAL HEMOGLOBIN ACCURACY (SpHb g/dL)
Adults/Pediatrics . . . . .8 – 17 g/dL ± 1 g/dL

RESOLUTION
Oxyhemoglobin Saturation (%SpO$_2$) 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$_2$ 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

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* SpO$_2$, SpCO, and SpMet accuracy was determined by testing healthy adult volunteers in the range of 60% - 100% SpO$_2$, O% - 40% SpCO, and 0% - 15% SpMet against a laboratory CO-Oximeter. SpO$_2$ 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$_2$ and 0.5 - 2.5% HbMet with a resultant accuracy of 2.9% SpO$_2$ 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

MASIMO
Closer to the Heart™