Medtronic

RespArray™ patient monitor

Safety made simple.

Innovative patient safety made easy

To protect patients, you need every advantage you can get. Because respiratory compromise – incidents of respiratory insufficiency, failure, and arrest – is a real threat to patients and health systems.[1,2] That's why continuous capnography and pulse oximetry monitoring can be a critical tool to help reduce adverse events associated with respiratory compromise.

Meet the RespArray™ patient monitor – featuring Nellcor™ pulse oximetry and Microstream™ capnography technologies. Designed for continuous monitoring during procedural sedation and in medical-surgical units.

Get the data you need quickly and easily to help you detect respiratory compromise early by connecting to your EMR wirelessly for easy integration into your workflow. Count on a dedicated team who's with you every step of the way – from setup and training to deployment and beyond.

Smart. Connected. Intuitive.

See how the RespArray™ patient monitor's simple connectivity and seamless integration innovates patient safety.

- Includes HL7 interface, is compatible to Vital Sync™, and is WiFi-enabled
- Large, intuitive touchscreen allows you to see from multiple angles and from a distance
- Monitor can be configured in many ways to meet your monitoring needs with five monitoring parameters for individual or simultaneous use, including SpO_2, $EtCO_2$, ECG, NiBP, and continuous temperature monitoring

Manage risks – and alarms.

Experience world-class Nellcor™ pulse oximetry and Microstream™ capnography technologies, designed to detect respiratory compromise early and help reduce alarm fatigue.

- Track trends with near real-time monitoring and diagnostics so you can get to patients sooner.
- Focus on your most critical patients with built-in SpO_2 (Nellcor™ pulse oximetry) and $EtCO_2$ (Microstream™ capnography) proprietary algorithms, plus ECG, NiBP, and continuous temperature monitoring.
- Prioritize safety while you cut costs by continuously monitoring high-risk patients, which may help save a medium-sized hospital an average of $535K annually.‡

Service that goes beyond products.

Depend on our dedicated white glove service team, customizable plans, and service options to fit your individual needs.

- Get optimal value with personalized support, education, and training that effectively reduces adverse events and enables your team to deliver exceptional patient care.
- Access our experienced team of tenured nursing professionals, respiratory therapists, informatics experts, and engineers with the knowledge to understand your challenges and optimally implement the monitor within your workflow.

The patient monitoring systems should not be used as the sole basis for diagnosis or therapy and are intended only as adjuncts in patient assessment.

‡This assumes a 20% respiratory depression reduction and an annual general care floor volume of 2,447 patients receiving opioids per medium-sized hospital. Ninety percent of surgical patients and 45% of medical patients on U.S. general care floors receive opioids. Continuous pulse oximetry and capnography device pricing assumptions used list pricing for the following: a Capnostream™ 35 portable respiratory monitor prorated over 7 years; a Microstream™ capnography filter line, and a disposable Nellcor™ pulse oximetry sensor, resulting in $52.73 in device costs per continuously monitored patient stay on a medical surgical floor. For intermittent pulse oximetry monitoring, device pricing consisted of a multiparameter monitor prorated over 7 years and a reusable pulse oximetry sensor, resulting in $0.68 in device costs per patient stay. Additional information on pricing and assumptions are available in the study publication.

Device	Part number
RespArray™ patient monitor	**RESPARRAYAHA01** (AHA configuration)
	RESPARRAYIEC01 (IEC configuration)

Product specifications	
Warranty	Three-year standard warranty to be free of defects in materials and workmanship

General characteristics	
Unit dimensions	13.1 inches (W) x 10.4 inches (H) x 6.4 inches (D)
Unit weight	< 11 pounds
Screen size	13.3-inch color TFT LCD touchscreen
Screen resolution	1920 × 1080 pixels

Operating environment	
Operating temperature	32 °F to 104 °F (0 °C to 40 °C)
Transport/storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Operating humidity	15% RH to 95% RH, non-condensing
Storage humidity	10% RH to 95% RH, non-condensing
Operating barometric pressure	70.7 kPa to 105 kPa (-1000 feet to 9625 feet)

External power supply	
AC voltage	100 to 240 VAC
Input current	1.6 A to 0.8 A
Frequency	50/60 Hz

Battery specifications	
Battery type	Rechargeable lithium-ion battery
Battery voltage	14.4 volts
Battery capacity	6,800 mAh
Battery life	≥ 5 hours when fully charged, continuous SpO_2 measurement and NIBP automatic measurement mode at interval of 15 minutes, SpO_2 pitch tone volume set to the minimum, ECG&TEMP&CO2 modules connected, screen brightness set to "1"
Battery charging time	≤ 5 hours to 90% charged with monitor off ≤ 6 hours to 90% charged with monitor on

Data storage	
Trends	Trend data 4,800 hours @ 1 second
NIBP measurements	1,200 sets
Events	1,000 sets, including physiological alarms and arrhythmia events

Algorithms and alarm management	
	Integrated Pulmonary Index™ algorithm Nellcor™ SatSeconds technology Apnea-Sat Alert™ algorithm Smart Alarm for Respiratory Analysis algorithm

Microstream™ capnography

CO_2 units	mm Hg or kPa or Vol%
CO_2, $etCO_2$ range	0–150 mm Hg
CO_2 waveform resolution	0.1 mm Hg
$etCO_2$ resolution	1 mm Hg
CO_2 accuracy	0–38 mm Hg: ±2 mm Hg 39–150 mm Hg: ± (5% of reading + 0.08 for every 1 mm Hg above 38 mm Hg)
Respiration rate range	0–150 bpm
Respiration rate accuracy	0–70 bpm: ±1 bpm 71–120 bpm: ±2 bpm 121–150 bpm: ±3 bpm
CO_2 alarms	No breath, etCO2 High, $etCO_2$ low, RR high, RR low, Integrated Pulmonary Index™ algorithm (IPI).
IPI also requires pulse oximetry information	
Flow rate	50 (42.5 ≤ flow ≤ 65) mL/minute, flow measured by volume
Waveform sampling	20 samples/second
Response time	2.95 seconds (typical); with use with sampling lines with long tubing, ~5.0 seconds
Initialization time	40 seconds (typical)
Calibration interval	Initially calibrate after 1,200 operating hours, then once a year or after 4,000 operating hours, whichever comes first

Nellcor™ pulse oximetry SpO_2

Measurement range	1–100%
Resolution	1%
Accuracy: Adult and pediatric mode	±2 digits over the range of 70–100% ±3 digits with motion ±3 digits with low saturation (60–80%)
Accuracy: Infant/neonatal mode	±2% over the range of 70–100% ±3% with motion ±3% with low saturation (60–80%)
Pulse rate range	20–250 bpm Pulse rate values of < 20 bpm shall be displayed as zero bpm Pulse rate values of > 250 bpm shall be displayed as 250 bpm
Pulse rate accuracy	±3 digits over the range of 20–250 bpm inclusive, including under low perfusion; with motion, 48 to 127 bpm ±5 digits
Alarms	SpO_2 high, SpO_2 low, PR high, PR low
Nellcor™ SatSeconds alarm management range	10–100

Electrocardiogram (ECG)

Lead mode	3 electrodes: I, II, III 5 electrodes: 1, II, III, aVR, aVL, aVF, V
Electrode standard	AHA, IEC
Display sensitivity (Gain selection)	1.25 mm/mV (×0.125), 2.5 mm/mV (×0.25), 5 mm/mV (×0.5), 10 mm/mV (×1), 20 mm/mV (×2), 40 mm/mV (×4), Auto gain
Sweep speed	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Heart rate range	ADU: 15 bpm–300 bpm PED/NEO: 15 bpm–350 bpm
Accuracy	±1 % or 1 bpm, whichever is greater

Noninvasive blood pressure (NIBP)

Technique	Oscillometry
Modes	Manual, auto, sequence, and continuous

Measuring range

Adult mode	SYS: 25 mm Hg to 290 mm Hg DIA: 10 mm Hg to 250 mm Hg MAP: 15 mm Hg to 260 mm Hg
Pediatric mode	SYS: 25 mm Hg to 240 mm Hg DIA: 10 mm Hg to 200 mm Hg MAP: 15 mm Hg to 215 mm Hg
Neonatal mode	SYS: 25 mm Hg to 140 mm Hg DIA: 10 mm Hg to 115 mm Hg MAP: 15 mm Hg to 125 mm Hg
Cuff pressure measuring range	0 mm Hg to 300 mm Hg
Blood pressure accuracy	1 mm Hg Maximum mean error ±5 mm Hg Minimum standard deviation 8 mm Hg
Maximum measuring period	Adult/Pediatric 120 s Neonate 90 s
Overpressure safety cutoff	Adult (297±3) mm Hg Pediatric (245±3) mm Hg Neonatal (147±3) mm Hg

Temperature

Technique	Thermal resistance; continuous
Position	Skin, oral/rectal
Measure parameter	T1, T2, TD
Measuring range	32 °F to 122 °F (0 °C to 50 °C)
Resolution	0.1 °F (0.1 °C)
Accuracy	±0.5 °F (± 0.2 °F excludes sensor error)

Data output and connectivity

Wireless communication	IEEE 802.11a/b/g/n; 2.4 GHz ISM band & 5 GHz ISM band
Encryption method	WPA/WPA2, WPA Enterprise/WPA2 Enterprise
Connectivity options	HL7 interface for EMR connectivity
Data output	Wi-Fi streaming data 4 USB A-type ports; USB2.0 protocol (enables flash disk, barcode scanner, mouse, and keyboard)
Video output	HDMI A-type port
Nurse call	Power supply: ≤ 12.6 VDC, 200 mA Max Interface signal: 12 V power supply and PWM waveform Interface type: PS2 connector

Mounting options

	Roll stand kit (includes slide-in mounting adaptor plate and accessory bin) Mounting arm assembly kit (includes mounting plate and accessory bin) Additional mounting options available from GCX, including slide-in mounting adaptor, roll stands, and wall arm mounts

To learn more about the RespArray™ patient monitor, visit us at medtronic.com/RespArray

1. Morris TA, Gay PC, MacIntyre NR, Hess DR, Hanneman SK, Lamberti JP, Doherty DE, Chang L, Seckel MA. Respiratory compromise as a new paradigm for the care of vulnerable hospitalized patients. *RespirCare*. 2017;62(4):497–512.
2. Andersen LW, Berg KM, Chase M, et al. Acute respiratory compromise on inpatient wards in the United States: Incidence, outcomes, and factors associated with in-hospital mortality. *Resuscitation*. 2016;105:123–129.

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