PHILIPS

Efficia

CM12 patient monitor

Measurements to guide your patient care

Technical data sheet

The Efficia CM Series patient monitors help you with monitoring, analyzing, recording and alarming multiple physiological parameters, at the bedside for adult, pediatric and neonatal patients. The monitors can also help you in transport situations within your facility.

The optional rack, creates a flexible, modular solution that offers multiple measurement combinations with a low capital investment. Adding modules such as dual IBP, CO_2, cardiac output (PiCCO optional), BIS and anesthesia gases transform the Efficia into an ideal alternative for different acuity levels, including intensive care units and peri-operative areas like the operating room.

The Efficia CM12 patient monitor provides you with information on ECG, basic arrhythmia, ST analysis, QT/QTc interval, SpO_2 (Philips FAST SpO_2, Masimo rainbow SET*, or Nellcor OxiMax) noninvasive blood pressure, dual temperature and impedance respiration. Depending on the options you order, the monitors can also help you measure:

- Dual invasive blood pressure
- Cardiac output
- Sidestream CO_2 (Respironics LoFlo, Respironics CapnoTrak and Microstream) or Mainstream (Respironics Capnostat)
- 12-lead ECG
- Enhanced arrhythmia analysis

* Masimo products may not be available in all countries. Check with your local sales organization

Features and benefits

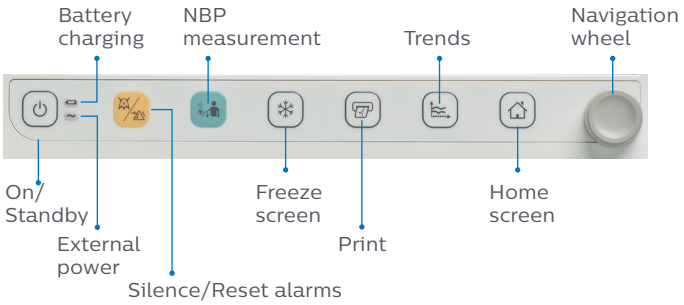
- 12-inch color screen with large numerics and waveforms (touchscreen optional)
- Easy selection of different display layouts
- Retrospective clinical information review from up to 240-hours of tabular and graphical trends, and optional 48-hours full disclosure
- Lithium-ion battery with practical access slots to make it easy to change the battery (with a standard, flat-head screwdriver)
- Audible and visual alarm indicators
- Compatible with a wide range of Philips supplies and accessories
- Connectivity to Efficia rack and modules
- Connectivity to central station
- Manual and automatic night mode to promote a quiet care unit during evening hours.
- Optional early warning scoring (EWS): is an assessment tool used to help recognize the early signs of deterioration in medical patients and trigger an appropriate response. When the score reaches a predefined threshold, this triggers the recommendation for the clinicians ranging from making more frequent assessments to calling a rapid response team.
- Interface to other systems using HL7 data over the serial connection, or LAN/optional WLAN
- Password-protected administrator and maintenance
- Easy software upgrades over the USB port
- Automatic or prompted patient ID entry using the optional barcode scanner support
- Optional integrated recorder for easy printing of patient data
- Optional roll stand, or wall mounts
- Optional assisting venous puncture
- Optional calculator applications: Hemodynamics, oxygenation, drug, Renal

Main components

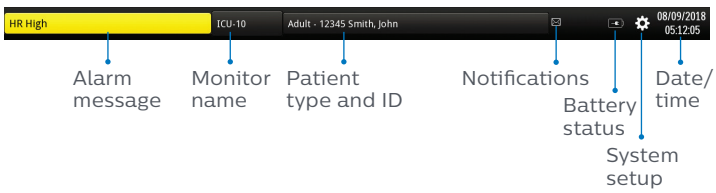
Display

The Efficia CM12 patient monitor gives you a 12-inch color LCD display (touchscreen optional).

The front panel also has the following



The status bar shows you the following information



User interface

The main screen shows the numeric parameter values, real-time waveforms, alarm messages and the system toolbars. To access the menus and settings associated with a measurement, use the navigation wheel or optional touchscreen to select the corresponding waveform or numeric values.

The buttons on the system toolbar on the display give you fast access to the following functionalities:

Screen layout
Select the layout of the main screen

Trends
See the parameter data in a graphical or tabular trend

Alarm settings
Change alarm limit settings for all parameters on the screen

Event marking
Mark an event that can be later reviewed in the Alarm/ Event tab of Trend Review

Record (optional)
Record patient data

Manage patient
Admit, discharge or edit patient data

NBP venous puncture (optional)
Start NBP venous puncture cuff inflation

Night mode*
Place monitor into night mode

Calculator applications
Hemodynamics, oxygenation, drug, renal calculations

Device connections

- USB port (complies with the USB 2.0 standard as a full-speed host) to:
  - Upgrade software
  - Connect to a barcode scanner or a serial interface adapter
  - Export tabular trend data

- Ethernet port to
  - Export HL7 data (option)
  - Connect the monitor to the central station

- Wireless connectivity**
  - Option E20 enables the monitor to access the EMR using the customer's existing wireless infrastructure. The monitor supports the following wireless standards: IEEE802.11a, 802.11b, 802.11g and 802.11n, operating in the 2.4 GHz or 5 GHz bands.

- EMR connectivity
  - Via LAN
  - Via WLAN

- Rack
  - Connect rack to Efficia CM12 via the powered USB connector
  - Offers four slots for measurement modules
    - Efficia dual IBP module
    - Efficia CO_2 module (Microstream)
    - Efficia BIS module
    - Efficia Gas module (with or without O_2)
    - Efficia Cardiac Output module (PiCCO optional)

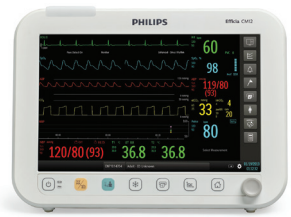
* If you have activated night mode.

** Wireless radio may not be available in all countries. Check with your local sales organization.

Safety standards

IEC 60601-1	IEC 60601-2-27	ISO 80601-2-55
EN 60601-1-2	IEC 80601-2-30	ISO 80601-2-56
IEC 60601-1-2	EN 80601-2-30	ISO 80601-2-61
IEC 60601-1-6	IEC 60601-2-34	ISO 17664-2
IEC 60601-1-8	EN-60601-2-34	IEC 62304
IEC 60601-2-26	IEC 60601-2-49	IEC 62366

- Protection class: class I, internally powered equipment, per EN/IEC 60601-1
- Degree of protection:
  - Type CF defibrillator-proof
  - BIS: Type BF defibrillator-proof
- Monitor: IPX2 Ingress protection against vertically falling water drops when enclosure is tilted up to 15°.
- Rack and modules: IPX1 Ingress protection against vertically falling water drops
- Protection against hazards of ignition of flammable anesthetic mixtures: equipment is not suitable for use in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide, per IEC 60601-1



Physical specifications

- Width: 33 cm (12.9 in)
- Height: 25 cm (9.8 in)
- Depth: 18 cm (7.1 in)
- Weight (with no battery): <5.0 kg (11.0 lb)
- Display
  - Type: 30.7 cm (12.1 in) LCD
  - Resolution: 1280 active pixels/line, 800 active lines/frame
  - Viewing angle: ± 15°

Battery

· Weight, 9-cell, lithium-ion: 0.5 kg (1.1 lb)

Rack and modules

- Rack
  - Width: 22 cm (8.7 in)
  - Height: 14 cm (5.5 in)
  - Depth: 16 cm (6.3 in)
  - Weight: <1,500 gram
- Efficia dual IBP module
  - Width: 5 cm (2.0 in)
  - Height: 10 cm (3.9 in)
  - Depth: 12 cm (4.7 in)
  - Weight: <250 gram
- Efficia BIS module
  - Width: 5 cm (2.0 in)
  - Height: 10 cm (3.9 in)
  - Depth: 12 cm (4.7 in)
  - Weight: <227 gram
- Efficia Gas with O_2 module (without water trap)
  - Width: 10 cm (3.9 in)
  - Height: 10 cm (3.9 in)
  - Depth: 13 cm (5.1 in)
  - Weight: <1,200 gram
- Efficia Gas without O_2 module (without water trap)
  - Width: 10 cm (3.9 in)
  - Height: 10 cm (3.9 in)
  - Depth: 12 cm (4.7 in)
  - Weight: <905 gram
- Efficia CO_2 module (Microstream)
  - Width: 5 cm (2.0 in)
  - Height: 10 cm (3.9 in)
  - Depth: 12 cm (4.7 in)
  - Weight: <350 gram
- Efficia Cardiac Output module (with PiCCO option):
  - Width: 5 cm (2.0 in)
  - Height: 10 cm (3.9 in)
  - Depth: 12 cm (4.7 in)
  - Weight: < 270 gram

Environmental specifications

CM12

- Water ingress: IPX2
- Operating temperature: 10° to 40° C
- Storage temperature: -20° to 50° C
- Operating/storage relative humidity: 15° – 90% RH, non-condensing
- Atmospheric pressure: 1013 – 701 mbar, 0 – 3000 meters, 0 – 9842 feet above sea level

Mechanical shock

Complies with mechanical shock requirement according to ISO 9919/IEC 80601-2-61 standards, for use within the healthcare facility. Test conditions include:

- Peak acceleration: 150 m/s² (15.3 g)
- Duration: 11 ms
- Pulse shape: half sine
- Number of shocks: 3 shocks per direction per axis (18 total)

Mechanical vibration

Complies with mechanical vibration requirement according to ISO 9919/IEC 80601-2-61 standards, for use within the healthcare facility. Test conditions include:

- Frequency range: 10 – 2000 Hz
- Resolution: 10 Hz
- Acceleration amplitude:
  - 10 – 100 Hz: 1.0 (m/s²)2/Hz
  - 100 – 200 Hz: -3.0 dB/octave
  - 200 – 2000 Hz: 0.5 (m/s²)2/Hz
- Duration: 10 minutes per each perpendicular axis (3 total)

Rack and modules

- Water ingress: IPX1
- Operating temperature: 10° to 40° C
- Storage temperature: -20° to 50° C
- Operating/storage relative humidity: 15° – 90% RH, non-condensing
- Atmospheric pressure: 1013 – 701 mbar, 0 – 3000 meters, 0 – 9842 feet above sea level

Mechanical shock

- Peak acceleration: 50 gram
- Duration: ≤3 msec
- Pulse shape: half sine
- Number of shocks: one shock on each axis (six total)

Mechanical vibration

- 0.30 gram RMS
- Frequency range: 5 – 500 Hz
- Acceleration amplitude:
  - 5 – 350 Hz: 0.0002 g²/Hz
  - 350 – 500 Hz: -6 dB/octave
- Duration: ten minutes per each perpendicular axis

Electrical specifications

- Internal battery: 9-cell lithium-ion battery, 10.8 – 11.1 V
- Dual battery
- Battery operating time (new, fully-charged battery, monitoring ECG, SpO_2 and NBP measured at 15-minute intervals)
- Up to 13 hours with dual 9-cell batteries
- Battery charge time: <5 hours (to charge to 90%, while the unit is monitoring with ECG, SpO_2 and making an NBP measurement every 15 minutes)
- Internal power supply: 100 – 240 Vac
- Power consumption: <75 watts
- Frequency: 50/60 Hz

Mounting options

Efficia CM12

The Efficia CM Series monitors have the following mounting options:

- Roll stand: 989803176601, 989803195541, and 989803206541
- Wall mount, 10-inch: 989803195571
- Wall channel: 989803152951
- Bedrail hook: option E16: 989803199711

Rack

- Wall mount kit (to mount monitor under the monitor in a wall mount application): 989803198311
- Pole clap kit (for roll stand or other poles): 989803199711

Recorder

- Channels: 4
- Recorder type: thermal
- Paper width: 58 mm
- User selectable speeds: 6.25, 12.5, 25 and 50 mm/s

Application features

- Mode of operation: continuous

Alarms

- Three alarm severity levels (high, medium, low) with corresponding visual and audio indicators
- Configurable alarm limits
- User can activate “auto alarm limits”, to set alarm limits based on the patient’s current vital sign values
- Visual alarm indicators, including an alarm LED, flashing numeric panes, alarm messages and alarm icons
- Audible alarms, configurable for volume, tone and silence
- Alarm audio range: 45 – 85 dB, ± 3 dB tolerance
- Ability to latch all physiological alarms

Trends

- Collect and store graphical and tabular trend data (up to 240 hours)
- Mark an event – to easily find corresponding trends
- Export trend data using HL7 over LAN or WLAN
- User-configurable display interval
- User-configurable printout intervals and content

Full disclosure (option)

- Displays the latest 48 hours of waveforms and parameters
- User-configurable waveform selection
- User-configurable waveform review sweep speed

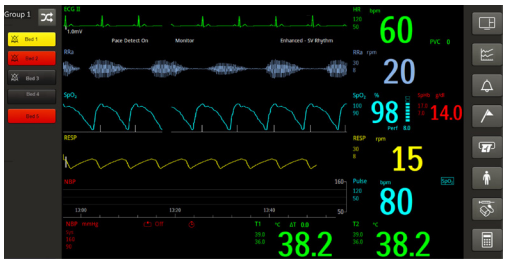
ST Map (option)

ST Map collects ST values created from the frontal (limb leads) and horizontal (chest leads) planes into an integrated, graphical display. This shows changes in the patient’s ST segments over time, as measured with the Philips ST/AR arrhythmia algorithm, in two multi-axis spider diagrams. This can simplify your recognition of ST changes, and their location in the heart.

Bed-to-Bed overview

Bed-to-Bed overview as a standard feature and can be used with or without a central station on the network. Monitors assigned to the same Bed-to-Bed group share alarms and parameter information.

Clinicians can quickly evaluate the status of all patient in the group by looking at the screen of one of the monitors in that group.



Pulse Pressure Variation (PPV)

PPV is a standard feature for monitors configured with the B10 invasive blood pressure option. PVV is also available in monitors using the Efficia Cardiac Output module with the PiCCO option.

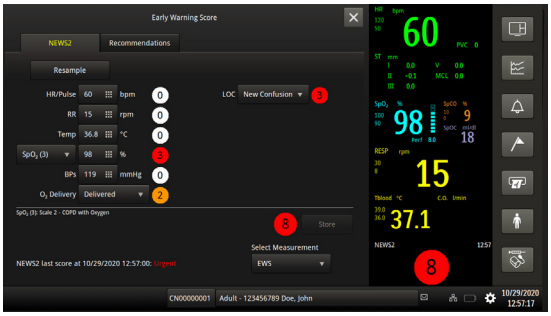
Clinicians can use PPV to get an indication of the patient’s blood volume and to assess the need of fluid replacement therapy.

Night Mode

The night mode function allows the clinician to configure the patient monitor’s screen brightness and the speaker volume. This allows the hospital to reduce noise and light pollution, specially during the evening hours.

Early Warning Scoring (EWS)

An early warning score is an assessment tool used to help recognize the early signs of deterioration in medicalpatients and trigger an appropriate response. When the score reaches a predefined threshold, this triggers the recommendation for the clinicians ranging from making more frequent assessments to calling a rapid response team. The EWS application support protocols like MEWS, NEWS2, QSOFA, as well as user-defined protocols.



Measurement specifications

ECG

- Heart rate range
  - Adult: 15 – 300 bpm
  - Pediatric and neonatal: 15 – 350 bpm
- Heart rate accuracy: ± 1% or ± 1 bpm, whichever is greater
- QT/QTc interval accuracy: +/- 30 ms
- Bandwidth
  - Normal monitoring: 0.67 – 40 Hz
  - Filtered monitoring: 0.67 – 20 Hz
  - Extended monitoring: 0.05 – 100 Hz
- Leads
  - Efficia CM12: 3-lead, 5-lead and 12-lead (optional)
- Display sweep speeds: 12.5, 25 and 50 mm/s
- Pace pulse detection: indicator of pace pulse on waveform display (user-selectable)
- ECG size (sensitivity): 4,0, 2.0, 1.0, 0.5, 0.25 cm/mV or Auto
- Lead off condition detected and displayed
- Single-ended input impedance: >2.5 MΩ
- Common mode rejection ratio (CMRR): >86 dB (with 51 kΩ/47 nF imbalance)
- Input signal range: ± 5 mV

ECG arrhythmia

- Respiration excitation waveform: <250 µA, 37 kHz nominal
- Time to alarm for tachycardia: <5.0 seconds
- Tall T-wave rejection capability: tested to a T-wave amplitude of 1.8 mV
- Three different heart rate averaging methods are used:
  - Normally, by averaging the 12 most recent R to R intervals.
  - For runs of PVCs, up to 8 R to R intervals are averaged.
  - If each of three consecutive R to R intervals is greater than 1200 ms (that is, rate less than 50 bpm, 80 bpm for neonates), then the four most recent R to R intervals are averaged.
- Response time of heart rate meter to change in heart rate (HR change from 80 bpm to 120 bpm, or change from 80 bpm to 40 bpm): 10 seconds maximum
- Heart rate meter accuracy and response to irregular rhythm:
  - Ventricular bigeminy: 80 bpm
  - Slow alternating ventricular bigeminy: 60 bpm
  - Rapid alternating ventricular bigeminy: 120 bpm
  - Bidirectional systoles: 90 bpm
- Accuracy of input signal reproduction: methods A and B were used to establish overall system error and frequency response
- Time to alarm for cardiac standstill: <10 seconds
- Time to alarm for low heart rate: <10 seconds
- Time to alarm for high heart rate: <10 seconds
- Pacemaker pulse rejection: rejects ± 2mV to ± 700 mV; Pulse widths 0.1 – 2.0 ms; with no overshoot (Meets AAMI EC13 using test method A)
- Pacer pulse detector rejection of fast ECG signals with a 5mV input, a minimum slew rate of 1V/s. RTI will trigger the pace pulse detector

Impedance respiration

- Technique: transthoracic impedance
- Measurement range: 3 – 150 rpm
- Resolution: 1 rpm
- Accuracy:
  - ± 1 rpm in the range 3 – 120 rpm
  - ± 2 rpm in the range 121 – 150 rpm
- Respiration excitation waveform: <250 µA, 37 kHz nominal
- ECG leads used: RA to LL
- Display sweep speeds: 6.25, 12.5, 25, 50 mm/s
- Lead off condition detected and displayed

Philips SpO_2

- Measurement range
  - SpO_2: 0 – 100%
  - SpO_2 resolution: 1%
  - Pulse rate: 30 – 300 bpm
  - Pulse rate resolution: 1 bpm
- Pulse rate accuracy: 2% or 1 bpm, whichever is greater
- SpO_2 accuracy* (within the range 70 – 100%), Philips reusable sensors
  - ± 2% – M1191B, M1191BL, M1192A,
  - ± 3% – M1193A, M1194A, M1196A, M1191T, M1196T

  SpO_2 accuracy* (within the range 70 – 100%), Philips disposable sensors
  - ± 3% – M1131A, M1133A (neonatal), M1134A (neonatal)
  - ± 2% – M1132A, M1133A (adult/infant), M1134A (adult/infant)
- SpO_2 accuracy* (within the range 70 – 100%), Maismo sensors
  - ± 2% – LNCS Adtx, Adtx-3, Pdtx, Pdtx-3, LNCS Inf, Inf-3, Inf-L, LNCS Neo (Adult), Neo-3 (Adult), LNCS Neo-L (>40kg), LNCS Trauma, LNCS Newborn Infant/Pediatric, RD SET Adt, Adt (CS-2), Adt (CS-3), RD SET Pdt, Pdt (CS-2), Pdt (CS-3), RD SET Inf, Inf (CS-2), Inf (CS-3), RD SET Neo (Adult), RD SET Neo (Adult) (CS-2), RD SET Neo (Adult) (CS-3), RD SET Trauma, RD SET Newborn Infant/Pediatric, LNCS DCI, DCIP, LNCS YI (Adult/Pedi/Infant), RD SET DCI, DCIP
  - ± 3% – LNCS Neo (Neo), Neo-L (< 3kg), LNCS NeoPt, NeoPt-3, NeoPt-L LNCS Neo-3 (Neo), LNCS Newborn Neonatal, RD SET Neo Pt, Neo Pt (CS-2), RD SET Neo Pt (CS-3), RD SET Newborn Neonatal, RD SET Neo (Neonatal), RD SET Neo (Neonatal) (CS-2), RD SET Neo (Neonatal) (CS-3), LNCS YI (Neo)
  - ± 3.5% – LNCS TC-I, RD SET TC-I
- Wavelength range**: 500 – 1000 nm for all specified sensors
- Maximum optical output power: ≤15 mW for all specified sensors

*Sensor accuracy was obtained by performing controlled hypoxia studies on healthy, non-smoking adult volunteers (according to EN ISO 9919). The SpO_2 readings have been compared to CO-oximeter measurements on arterial blood samples. To represent the general population, data from at least 10 subjects (male and female) with a wide range of skin color was taken to validate SpO_2 accuracy.

**Information about wavelength ranges can be useful for clinicians performing photodynamic therapy.

Invasive blood pressure
- Measurement range: -40 to 360 mmHg
- Input sensitivity: 5 µV/V/mmHg
- Zero static offsets: up to ± 200 mmHg with ± 1 mmHg accuracy
- Gain accuracy
  - Accuracy: ± 1%
  - Drift: less than 0.05%/° C
- Overall accuracy (including transducer): ± 4 mmHg or ± 4%, whichever is greater
- Volume displacement of CPJ840J6: 0.2 mm^3/100 mmHg
- Warm up time of equipment and transducer: <15 seconds

Noninvasive blood pressure (NBP)
- Technique: oscillometric, using stepwise deflation pressure
- Adult measurement range
  - Systolic: 30 – 270 mmHg (4.0 – 36.0 kPa)
  - Diastolic: 10 – 240 mmHg (1.3 – 32.0 kPa)
  - MAP: 20 – 250 mmHg (2.7 – 33.3 kPa)
- Pediatric measurement range
  - Systolic: 30 – 180 mmHg (4.0 – 24.0 kPa)
  - Diastolic: 10 – 150 mmHg (1.3 – 20.0 kPa)
  - MAP: 20 – 160 mmHg (2.7 – 21.3 kPa)
- Neonatal measurement range
  - Systolic: 30 – 130 mmHg (4.0 – 17.0 kPa)
  - Diastolic: 10 – 100 mmHg (1.3 – 13.3 kPa)
  - MAP: 20 – 120 mmHg (2.7 – 16.0 kPa
- Blood pressure accuracy
  - Maximum standard deviation: 8 mmHg
  - Maximum mean error: ± 5 mmHg
- NBP cuff pressure accuracy
  - ± 3 mmHg or 2% of the reading, whichever is greater
- Pulse rate range: 40 – 300 bpm
- Pulse rate accuracy (average over the NBP cycle)
  - 40 – 100 bpm: ± 5 bpm
  - 101 – 200 bpm: ± 5% of reading
  - 201 – 300 bpm: ± 10% of reading
- Initial cuff inflation
  - Adult: 160 mmHg (21.3 kPa)
  - Pediatric: 140 mmHg (18.7 kPa)
  - Neonatal: 100 mmHg (13.3 kPa)
- NBP intervals: automatic measurements at intervals of 1, 2, 3, 5, 10, 15, 30, 60, 90, 120 minutes and STAT

Temperature measurements
- Measurement range for all measurement sites: 0° to 50° C (32° to 122° F)
- Accuracy ± 0.1° C – without temperature probe
- Mode of operation: direct mode
- Heating and cooling transient response time: ≤ 150 s

Microstream CO_2
- Measurement range: 0 – 150 mmHg
- Data sample rate: waveform sampling, 20 samples per second
- Flow rate: 50 ml/min, + 15 ml/min, – 7.5 ml/min
- CO_2 waveform resolution: 0.1 mmHg
- $etCO_2$, $imCO_2$ resolution: 1.0 mmHg
- Initialization and power-up time: 40 seconds (typical), 3 minutes maximum
- Total response time for adults/pediatrics is approximately 3.9 seconds, for 10% to 90% changes in CO_2 concentration
- The maximum CO_2 response time (with a standard-length FilterLine) is 5.3 seconds (typical).
- Calibration interval: initial calibration after one year or 1,200 hours, whichever comes first; then once per year, or every 4000 hours, whichever comes first
- Auto zero interval: once per hour (typical)
- Leak tightness: <250 mBar/min when a 30% vacuum is invoked on the flow system
- Accuracy
  - 0 - 38 mmHg: ± 2 mmHg
  - 39 - 99mmHg: ± (5% of reading + 0.08 for every 1 mmHg above 39 mmHg)
  - 100 – 150 mmHg: ± (0.43 Vol% + 8 % rel.)
- Respiration rate range: 0 – 150 rpm
- Respiration accuracy
  - ± 1 rpm in the range 0 – 70 rpm
  - ± 2 rpm in the range 71 – 120 rpm
  - ± 3 rpm in the range 121 – 150 rpm
- Automatic barometric pressure: automatic pressure compensation
- Effects of cyclical pressure
  - Overpressure: + 60 cmH_2O
  - Underpressure: –20 cmH_2O

Mainstream CO_2*
- Measurement range: 0 – 150 mmHg**
- $imCO_2$ measurement range (based on lowest reading over last 20 seconds): 3 – 50 mmHg
- Data sample rate: waveform sampling, 20 samples per second
- CO_2 waveform resolution: 0.1 mmHg
- $etCO_2$, $imCO_2$ resolution: 1.0 mmHg
- Initialization time: full specification $etCO_2$ measurement displays after warm up, in less than 2 minutes
- Total response time: <2 seconds
- Calibration interval: no calibration required
- Auto zero interval: only required when changing the airway adapter style
- Accuracy (gas temperature at 35° C):
  - ± 2 mmHg in the range 0 – 40 mmHg
  - ± 5% of reading in the range 41 – 70 mmHg
  - ± 8% of reading in the range of 71 – 100 mmHg
  - ± 10% of reading in the range of 101 – 150 mmHg
- Respiration rate range: 0 – 150 rpm
- Respiration rate accuracy: ± 1 rpm
- Drift of measurement accuracy:
  - Short-term drift (4 hours of use): does not exceed 0.8 mmHg
  - Long-term drift (120-hour period): retains accuracy specification
- Barometric pressure: configured by system administrator

*Note:
- No degradation due to respiration rate or I:E ratio
- Accuracy is affected by temperature and barometric pressure
- Accuracy specification will be maintained for halogenated anesthetic agents present at clinically accepted MAC (Minimum Alveolar Concentration) levels
- Xenon: the presence of Xenon in the exhaled breath will negatively bias CO_2 values by an additional 5 mmHg at 38 mmHg
- Desflurane: the presence of desflurane in the exhaled breath at concentrations greater than 5% will positively bias CO_2 values by up to an additional 3 mmHg at 38 mmHg
- Ethanol, isopropanol, acetone, methane: CO_2 accuracy will not be affected by the presence of 0.1% ethanol, 0.1% isopropanol, 0.1% acetone, or 1% methane
- Full accuracy specifications will be maintained for all non-condensing humidity levels
- In the presence of interfering gases, the CO_2 measurement meets the ISO 80601-2-55 accuracy requirements. It represents an additional error of ± 4 mmHg in the range of 0–40 mmHg (at sea level)
- Additional error based on the consideration that interfering gas compensation is properly set

**Other measurement units (such as kPa and cmH_2O) are also supported.

Nellcor OxiMax SPO_2

- Range of SpO_2 measurement: 1 – 100%
- Range of derived pulse rate: 20 – 250 bpm
- Perfusion range: 0.03 – 20%
- Pulse rate accuracy: 20 – 250 bpm ± 3 bpm

	SpO_2 range
Nellcor (single-patient use)	70 – 100%
A	± 2.5
P	± 2.5
P (adult)	± 2.5
N (neonate)	± 3.5
I	± 2.5
Nellcor (reusable)	70 – 100%
D-YS (infant to adult)	± 3
D-YS (neonate)	± 4
D-YS with D-YSE ear clip	± 3.5
D-YS with D-YSPD spot clip	± 3.5
DS-100A	± 3
OXI-A/N (adult)	± 3
OXI-A/N (neonate)	± 4
OXI-P/1	± 3

- Contain light-emitting diodes (LEDs) that emit red light at a wavelength of approximately 660 nm and infrared light at a wavelength of approximately 900 nm
- Total optical output power: <15 mW
- Response time:
  - Fast mode: .2 – 4 seconds
  - Normal mode: 6 – 7 seconds

CapnoTrak CO_2

- CO_2 measurement range: 0 – 99 mmHg, 0 – 13.20 kPa
- $etCO_2$ and $imCO_2$ display resolution: 1 mmHg
- CO_2 measurement accuracy (gas temperature at 35° C)
  - 0 – 38 mmHg ± 2 mmHg of actual reading
  - 39 – 99 mmHg ± 10% of actual reading
  - All CO_2 levels above 80 bpm: ± 12% of actual reading
- Initialization time:
  - Capnogram display time: less than 10 seconds
  - Full accuracy specification: within three minutes at ambient temperature of 25° C
- CO_2 total system response time: <4 seconds; includes transport time and rise time with water filter assembly and airway adapter
- CO_2 stability (drift of measurement accuracy):
  - Short-term drift: <0.80 mmHg over six hours
  - Long-term drift: accuracy specification will be maintained over a 120-hour period
- Measurement rate: 100 CO_2 samples per second
- No routine calibrations required
- Zero function is provided to remove system drift due to changes in optical or electrical characteristics
- System does not allow a zero under the following conditions:
  - Breaths are being detected
  - Module has not completed warm-up
  - "Accessory disconnected" status is present
- $etCO_2$ measurement range: 0.5 – 99 mmHg
- $etCO_2$ accuracy:*
  - 0 – 40 bpm, 0 – 99 mmHg: +0.5 mmHg, -2 mmHg
  - 41 – 70 bpm, 0 – 99 mmHg: +0.5 mmHg, -6%
  - 71 – 100 bpm, 0 – 99 mmHg, +0.5 mmHg, -14%
- $imCO_2$ measurement range: 0.3 – 50 mmHg
- Respiration rate (RR)
  - Measurement range: 0.2 – 100 bpm
  - Accuracy: ± 1 bmp. Method: eight-breath averaging.
  - Compensations for expired O_2, balance gas (N_2O, He, room air) and anesthetic agents. Uses gas compensation information to correct raw CO_2 value.
- Pressure compensation: automatic correctionn

* Accuracy is based upon the following conditions:
- Gas mixtures of CO_2, balance N_2, dry gas at 760 mmHg at 25° C.
- Additional error is defined as the deviation from the CO_2 value at 0 bpm.
- Accuracy will be measured using the sampling inlet tube, front panel connector, water filter assembly and large airway adapter at 50 ml/minute flow rate.
- Maximum additional error is verified at 5% and 10% using an I:E ratio of 1:2.

LoFlo CO_2

- CO_2 measurement range: 0 – 150 mmHg, 0 – 20 kPa, 0-204 cmH2O
- $etCO_2$ and $imCO_2$ display resolution: 1 mmHg
- CO_2 measurement accuracy (gas temperature at 25° C)
  - 0 – 40 mmHg ± 2 mmHg of actual reading
  - 41 – 70 mmHg ± 5% of actual reading
  - 71 – 100 mmHg ± 8% of actual reading
  - 101 – 150 mmHg ± 10% of actual reading
  - All CO_2 levels above 80 bpm: ± 12% of actual reading
- Initialization time:
  - Capnogram display time: less than 20 seconds
  - Full accuracy specification: within two minutes at ambient temperature of 25° C
- CO_2 total system response time: <4 seconds; includes transport time and rise time with water filter assembly and airway adapter
- CO_2 stability (drift of measurement accuracy):
  - Short-term drift: <0.80 mmHg over four hours
  - Long-term drift: accuracy specification will be maintained over a 120-hour period
- Sampling rate: 100 Hz
- No routine calibrations required
- Zero function is provided to remove system drift due to changes in optical or electrical characteristics
- System does not allow a zero under the following conditions:
  - Breaths are being detected
  - Module has not completed warm-up
  - "Accessory disconnected" status is present
- $imCO_2$ measurement range: 0.3 – 50 mmHg
- Respiration rate (RR)
  - Measurement range: 0.2 – 150 bpm
  - Accuracy: ± 1 bmp

BIS

- Measurement range
  - Bispectral index (BIS): 0 – 100%
  - Electromyography (EMG): 30 – 80 dB
  - Signal quality index (SQI): 0 – 100%
  - Suppression ratio (SR): 0 – 100%
  - Spectral edge frequency (SEF): 0.5 – 30.0 Hz
  - Total power (TP): 40 – 100 dB
  - Burst count (BC): 0 – 30
- Resolution
  - Bispectral index (BIS): 1%
  - Electromyography (EMG): 1 dB
  - Signal quality index (SQI): 1%
  - Suppression ratio (SR): 1%
  - Spectral edge frequency (SEF): 0.1 Hz
  - Total power (TP): 1 dB
  - Burst count (BC): 1
- EEG trace scale: ±50 µV; ±75 µV; ±100 µV; ±200 µV; ±500 µV; ±750 µV; ±1000 µV
- EEG sweep speeds: 6.25, 12.5, 25.0, 50.0 mm/s
- Signal bandwidth: 0.25 – 100 Hz (-3 dB) ± 10%
- EEG waveform noise: <0.3 µV RMS (2.0 µV peak-to-peak); 0.25 – 50 Hz
- Common mode rejection (isolation mode): 110 dB at 50/60 Hz to earth ground
-

Gas

- Method: sidestream gas measurement
- Infrared measurement: CO_2, N_20, anesthetic agents
- Paramagnetic measurements: 0_2 (only AGOI version)
- Not suitable for use in MRI environment
- Automatic barometric pressure compensation
- Gas exhaust that should be connected to a scavenging system to avoid patient cross-infection; no return to breathing system
- Water trap lifetime: four weeks
- Sampling rate: 200 ml/min (± 20)
- Automated cyclical zeroing once a day (in error-free operation)
- Zeroing duration: <20 s
- Measurement range
  - O_2: 0 – 100 Vol% (only AGOI version)
  - CO_2: 0 – 13.6 Vol%
  - N_2O: 0 – 100 Vol%
  - Anesthetic gases:
    - Halothane: 0 – 8.5 Vol%
    - Isoflurane: 0 – 8.5 Vol%
    - Enflurane: 0 – 10 Vol%
    - Servoflurane: 0 – 10 Vol%
    - Desflurane: 0 – 20 Vol%
- Accuracy
  - O_2: ± (2.5 Vol% + 2.5 % rel.) (only AGOI version)
  - CO_2: ± (0.43 Vol% + 8% rel.)
  - N_2O: ± (2 Vol% + 8% rel.)
  - Anesthetic gases:
    - Halothane: ± (0.02 Vol% + 15% rel.)
    - Isoflurane: ± (0.02 Vol% + 15% rel.)
    - Enflurane: ± (0.02 Vol% + 15% rel.)
    - Servoflurane: ± (0.02 Vol% + 15% rel.)
    - Desflurane: ± (0.02 Vol% + 15% rel.)
- Rise time (t10...90)
  - O_2: <500 ms (only AGOI version)
  - CO_2: <350 ms
  - N_2O: <350 ms
  - Anesthetic gases:
    - Halothane: <450 ms
    - Isoflurane: <450 ms
    - Enflurane: <450 ms
    - Servoflurane: <450 ms
    - Desflurane: <450 ms
- Time from startup to reach specified accuracy: <450s
- Automatic detection (only AGOI version):
  - Primary gas: <0.3 Vol%
  - Secondary gas: <0.4 Vol%
- With desflurane concentration greater than 0.4 Vol%, mixture detection occurs at the latest when the concentration of the second anesthetic gas rises above 10% of the desflurane concentration
- Respiration range: 0 – 100 /min
- Respiration accuracy:
  - 0 – 60 /min: ± 1 /min
  - >60 /min: not specified
- Respiration resolution: 1 /min

Cardiac output (Right Heart method)

- Measurement range
  - Cardiac output: 0.10 to 20.00 L/min
  - Tblood: 27.0° to 43.0° C
  - Tinj: -1.0° C to 27° C
- Resolution
  - Cardiac output: 0.01 L/min
  - Tblood: 0.1° C
  - Tinj: 0.1° C
- Measurement accuracy
  - Cardiac output (system*): ± 5% or 0.2 L/min, whichever is greater, for cardiac output ≤10 L/min; ± 8% for cardiac output >10 L/min
  - Tblood: ± 0.1° C (without probe)
  - Tinj: ± 0.1° C (without probe)
- Parameters:
  - C.O.
  - Mean CO

Cardiac output (Transpulmonay method):

- Measurement range:
  - Cardiac output: 0.10 to 25.0 L/min
  - Tblood:
    - Rated output range: 35 to 39 degrees C
    - Extended range: 31 to 42 degrees C
  - Tinj: -1.0 to 30.0 degrees C

- Resolution:
  - Cardiac output: 0.01 L/min
  - Tblood: 0.1 degrees C
  - Tinj: 0.1 C

- Accuracy:
  - Cardiac output (System*): +/- 5% or 0.2 L/min (whichever is greater)
  - Tblood: +/- 0.1 degrees C (without probe)
  - Tinj: +/- 0.1 degrees C (without probe)

- Parameters:
  - C.O.
  - Mean CO

- PiCCO parameters:
  - CCO/CCI
  - SV/SI
  - C.I.
  - GEDV/GEDVI
  - ITBV/ITBVI
  - SVV
  - PPV
  - SVR/SVRI
  - CFI
  - GEF
  - EVLW/EVLWI
  - CPO/CPI
  - PVPI

Calculators:

- Hemodynamic calculations
- Oxygenation calculations
- Drug calculations
- Renal calculations

* System accuracy is the overall accuracy of the patient monitor and the probes.

Ordering information

863303: Efficia CM12

Basic: 3- and 5-lead ECG, basic arrhythmia analysis, impedance respiration, ST analysis, QT/QTc, Philips NBP, dual continuous temperature, mini-trend 8 hours, LAN connectivity, ECG analog output, night mode, external display connection.

Monitor options: adult/pediatric/neonatal accessory kit (mandatory option), SpO_2 (Philips Fast, Masimo rainbow SET, or Nellcor Oximax, mandatory option), touchscreen, 12-lead ECG, enhanced arrhythmia analysis enhanced arrhythmia analysis, internal recorder, dual IBP, ST map, Sidestream CO_2 (Respironics LoFlo, Respironics CapnoTrak and Microstream) or Mainstream (Respironics Capnostat) cardiac output, full disclosure, HL7 output, wireless LAN connectivity for EMR, assisting venous puncture, barcode support (barcode scanner hardware must be ordered separately), bed rail hook, single or dual 3- or 9-cell lithium-ion battery.

ECG accessories

ECG trunk cables

Part number	Accessories
989803160641	Efficia 3/5-lead trunk cable, AAMI/IEC
989803170171	3-lead trunk cable, OR, AAMI/IEC, 2.7 m (9 ft.)
M1669A	3-lead trunk cable, AAMI/IEC, 2.7 m (9 ft.)
989803170181	5-lead trunk cable, OR, AAMI/IEC, 2.7 m (9 ft.)
M1668A	5-lead trunk cable, AAMI/IEC, 2.7 m (9 ft.)

Reusable 3-lead sets

Part number	Description
989803160651	Efficia 3-lead, grabber, AAMI
989803160661	Efficia 3-lead, grabber, IEC
M1671A	3-lead general use/ICU, grabber, AAMI
M1672A	3-lead general use/ICU, grabber, IEC
M1673A	3-lead general use/ICU, snap, AAMI
M1674A	3-lead general use/ICU, snap, IEC
M1624A	3-lead general use/ICU miniclip, 0.7 m lead, AAMI
M1626A	3-lead general use/ICU miniclip, 0.7 m lead, IEC
M1675A	3-lead OR, grabber, AAMI
M1678A	3-lead OR, grabber, IEC

Disposable 3-lead sets

Part number	Description
989803173121	3-lead, bedside, single patient use, grabber, AAMI
989803174201	3-lead, bedside, single patient use, grabber, IEC

Reusable 5-lead sets

Part number	Description
989803160691	Efficia 5-lead, grabber, AAMI
989803160701	Efficia 5-lead, grabber, IEC
M1968A	5-lead general use/ICU, grabber, AAMI
M1971A	5-lead general use/ICU, grabber, IEC
M1644A	5-lead general use/ICU, snap, AAMI
M1645A	5-lead general use/ICU, snap, IEC
M1973A	5-lead OR, grabber, AAMI
M1974A	5-lead OR, grabber, IEC

Disposable 5-lead sets

Part number	Description
989803173131	5-lead, bedside, single patient use, grabber, AAMI
989803174211	5-lead, bedside, single patient use, grabber, IEC

Reusable 10-lead sets

Part number	Description
M1663A	10-lead, general use/ICU, 2.0 m lead
M1949A	10-lead, general use/ICU, 2.7 m lead

5-lead sets for 10-lead monitoring

Part number	Description
M1976A	AAMI, ICU, grabber, chest
M1978A	IEC, ICU, grabber, chest
M1602A	AAMI, ICU, snap, chest
M1979A	AAMI, OR, grabber, chest

ECG electrodes

Part number	Description
40493D	Silver/silver chloride sensor, foam, pre-gelled (5/pack, 300/case)
40493E	Silver/silver chloride sensor, foam, pre-gelled (30/pack, 300/case)
13953A	Preattached leadwire electrode, square
13953D	Preattached leadwire electrode, square
989803148821	Adult, radiolucent, foam

SpO_2 accessories

Philips sensors

Part number	Description	Extension cable
M1191B	Adult finger sensor, for patients >50 kg (110 lb), 2 m cable	M1941A (2 m)
M1192A	Pediatric/small adult finger sensor, for patients 15 – 50 kg (33 – 110 lb), 1.5 m cable	M1941A (2 m)
M1193A	Neonatal foot/hand sensor, for patients 1 – 4 kg (2.2 – 8.8 lb), 1.5 m cable	M1941A (2 m)
M1194A	Adult ear clip sensor, for patients >40 kg (88 lb), 1.5 m cable	M1941A (2 m)
M1196A	Adult finger clip, for patients >40 kg (88 lb), 3 m cable	No extension cable
M1191BL*	Adult finger sensor, for patients >50 kg (110 lb), 3 m cable	No extension cable
M1191T	Adult Finger Glove Sensor, for patients >50 kg (110 lb), 0.45 m cable	M1943A (1.1 m) or M1943AL (3 m)
M1196T	Pediatric/adult finger sensor, for patients >40 kg (88 lb), 90 cm cable	M1943A (1.1 m) or M1943AL (3 m)

* Caution: do not connect extension cables to SpO_2 sensors with a part number that ends in L (for example, M1191BL).

Philips disposable sensors

Part number	Description	Adapter cable
M1131A	Adult/pediatric finger sensor, for patients >20 kg (44 lb)	M1943A (1.1 m) or M1943AL (3 m)
M1132A	Infant digit sensor, for patients 3 – 10 kg (7 – 22 lb)	M1943A (1.1 m) or M1943AL (3 m)
M1133A	Neonatal foot/hand sensor, for patients <3 kg (7 lb) Infant big toe/thumb sensor, for patients 10 – 20 kg (22 – 44 lb) Adult finger sensor, for patients >40 kg (88 lb)	M1943A (1.1 m) or M1943AL (3 m)
M1134A	Neonatal adhesive-free foot/hand sensor, for patients <3 kg (7 lb) Infant adhesive-free big toe/thumb sensor, for patients 10 – 20 kg (22 – 44 lb) Adult adhesive-free finger sensor, for patients >40 kg (88 lb)	M1943A (1.1 m) or M1943AL (3 m)

Nellcor OxiMax accessories

Part number	Description	Adapter cable
M1943NL	SpO_2 adapter cable, 3 meter	N/A
OC-3	Adaptor cable for OxiCliq sensor, 1.2 m (4.0 ft)	N/A
SC-PR	Nellcor preemie SpO_2 sensor, non-adhesive (single-patient use)	Must use M1943NL adapter cable
SC-NEO	Nellcor neonatal SpO_2 sensor, non-adhesive (single-patient use)	
SC-A	Nellcor adult SpO_2 sensor, non-adhesive (single-patient use)	
DS100A	Nellcor adult SpO_2 sensor, reusable (nonsterile), 3.0 ft (0.9 m)	
MAXAL	Nellcor adult XL SpO_2 sensor (sterile, single-use only), 3.0 ft (0.9 m)	
MAXFAST	Nellcor forehead SpO_2 sensor, (sterile, single-use only), 0.75 ml (2.5 ft)	
MAXN	Nellcor neonatal/adult SpO_2 sensor, (sterile, single-use only), 0.5 m (1.5 ft)	
MAXI	Nellcor infant SpO_2 sensor, (sterile, single-use only), 0.5 m (1.5 ft)	
MAXP	Nellcor pediatric SpO_2 sensor, (sterile, single-use only), 0.5 m (1.5 ft)	
MAXA	Nellcor adult SpO_2 sensor, (sterile, single-use only), 0.5 m (1.5 ft)	
MAXR	Nellcor adult SpO_2 nasal sensor (sterile, single-use only), 0.5 m (1.5 ft)	
OXI-A/N	Nellcor adult/neonatal SpO_2 sensor with wraps (reusable with adhesive)	
OXI-P/I	Nellcor pediatric/infant SpO_2 sensor with wraps (reusable with adhesive)	
D-YS	Nellcor SpO_2 sensor, multi-site, reusable (nonsterile), 1.2 m (4.0 ft)	
D-YSE	Nellcor SpO_2 ear clip, reusable (nonsterile), 1.2 m (4.0 ft)	
D-YSPD	Nellcor pediatric SpO_2 sensor clip, reusable (nonsterile), 1.2 m (4.0 ft)	
OxiCliq-P	Nellcor pediatric SpO_2 sensor, two-piece (sterile, single-use only)	Must use M1943NL adapter cable together with OC-3 adapter cable
OxiCliq-N	Nellcor neonatal/adult SpO_2 sensor, two-piece (sterile, single-use only)	
OxiCliq-A	Nellcor adult SpO_2 sensor, two-piece (aterile, single-use only)	

Masimo SpO_2 accessories

Part number	Description	Adapter cable
RD Set Adt	Finger/Toe sensor for patient size > 30 kg (66 lb), Adult	RD Set MP05 Patient Cable, or RD Set MP12 Patient Cable
RD Set CS-2 Adt	Finger/Toe cabled sensor for patient size > 30 kg (66 lb), Adult, 2ft	
RD Set CS-3 Adt	Finger/Toe sensor for patient size > 30 kg (66 lb), Adult, 3ft	
RD Set Pdt	Finger/Toe sensor for patient size 10~50 kg (22lb~110 lb),Pediatric	
RD Set CS-2 Pdt	Finger/Toe sensor for patient size 10~50 kg (22lb~110 lb),Pediatric, 2ft	
RD Set CS-3 Pdt	Finger/Toe sensor for patient size 10~50 kg (22lb~110 lb),Pediatric, 3ft	
RD Set DCI	Finger sensor for patient size > 30 kg (66 lb), Adult	
RD Set DCIP	Finger sensor for patient size 10 kg – 50 kg, (22 lb – 110 lb), Pediatric	
RD Set Inf	Thumb/Great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb), Infant Finger/Toe sensor for patient size 10 to 20kg (22lb~44lb) Infant	
RD Set Neo	Hand/Foot sensor for patient size < 3 kg (6.6 lb), Neonatal Finger~/Toe sensor for patient size > 40 kg (88 lb), Adult	
RD Set NeoPt	Hand/Foot sensor for patient size < 1kg (2.2 lb), 18 in. Neonatal	
RD Set CS-2 Inf	Thumb/Great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb), Infant Finger/Toe sensor for patient size 10 to 20kg (22lb~44lb) Infant, 2ft	
RD Set CS-2 Neo	Hand/Foot sensor for patient size < 3 kg (6.6 lb), Neonatal, 2ft Finger~/Toe sensor for patient size > 40 kg (88 lb), Adult, 2ft	
RD Set CS-2 NeoPt	Hand/Foot sensor for patient size < 1kg (2.2 lb), 18 in. Neonatal, 2ft	
RD Set CS-3 Inf	Thumb/Great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb), Infant Finger/Toe sensor for patient size 10 to 20kg (22lb~44lb) Infant, 3ft	
RD Set CS-3 Neo	Hand/Foot sensor for patient size < 3 kg (6.6 lb), Neonatal, 3ft Finger~/Toe sensor for patient size > 40 kg (88 lb), Adult, 3ft	
RD Set CS-3 NeoPt	Hand/Foot sensor for patient size < 1kg (2.2 lb), 18 in. Neonatal, 3ft	
RD Set Trauma	Finger/Toe sensor for patient size > 30 kg (66 lb), Adult	
RD Set Newborn Neonatal	Hand/Foot sensor for patient size < 3 kg (6.6 lb),, Newborn Neonatal	RD Set MP05 Patient Cable, or RD Set MP12 Patient Cable
RD Set Newborn Infant/ Pediatrics	Thumb/Great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb) Newborn Infant Finger/Toe sensor for patient size 10 kg – 30 kg (22 lb – 66 lb) Newborn Infant	
RD Set TC-I	Ear lobe sensor for patient size > 30 kg (66 lb), Adult	
LNCS Adtx	Finger sensor for patient size > 30 kg (66 lb), 18 in. Adult	LNC MP4 Patient Cable, or LNC MP10 Patient Cable
LNCS Adtx-3	Finger sensor for patient size > 30 kg (66 lb), 3 ft, Adult	
LNCS Pdtx	Finger sensor for patient size 10 kg – 50 kg (22 lb – 110 lb), 18 in. Pediatric	
LNCS Pdtx-3	Finger sensor for patient size 10 kg – 50 kg (22 lb – 110 lb), 3 ft, Pediatric	
LNCS Inf	Great toe sensor for patient size 3 kg – 20 kg (6.6 lb – 44 lb), 18 in. Infant	
LNCS Inf-3	Great toe sensor for patient size 3 kg – 20 kg (6.6 lb – 44 lb), 3 ft, Infant	
LNCS Inf-L	Great toe sensor for patient size 3 kg – 20 kg (6.6 lb – 44 lb), Infant	
LNCS Neo	Foot sensor for patient size < 3 kg (6.6 lb), 18 in. Neonatal Finger sensor for patient size > 40 kg (88 lb), 18 in. Adult	
LNCS Neo-3	Foot sensor for patient size < 3 kg (6.6 lb), 3Ft. Neonatal Finger sensor for patient size > 40 kg (88 lb), 3 ft. Adult	
LNCS Neo-L	Foot sensor for patient size < 3 kg (6.6 lb), Neonatal Finger sensor for patient size > 40 kg (88 lb), Adult	
LNCS NeoPt	Sensitive skin foot sensor for patient size < 1 kg (2.2 lb), 18 in. Neonatal	
LNCS NeoPt-3	Sensitive skin foot sensor for patient size < 1 kg (2.2 lb), 3 ft. Neonatal	
LNCS NeoPt-L	Sensitive skin foot sensor for patient size < 1 kg (2.2 lb), Neonatal	
LNCS Trauma	Finger sensor for patient size > 30 kg (66 lb), Adul	

Part number	Description	Adapter cable
LNCS Newborn Neonatal	Foot sensor for patient size < 3 kg (6.6 lb), 18 in. Newborn Neonatal	LNC MP4 Patient Cable, or LNC MP10 Patient Cable
LNCS Newborn Infant/ Pediatrics	Great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb) Newborn Infant Finger sensor for patient size 10 kg – 30 kg (22 lb – 66 lb) Newborn Infant	
LNCS DCI	Finger sensor for patient size > 30 kg (66 lb), Adult	
LNCS DCIP	Finger sensor for patient size 10 kg – 50 kg (22 lb – 110 lb), Pediatric	
LNCS TC-I	Ear lobe sensor for patient size > 30 kg (66 lb), Adult	
LNCS YI	Foot sensor for patient size 1 kg – 3 kg (2.2 lb – 6.6 lb), Neonatal Finger/great toe sensor for patient size 3 kg – 10 kg (6.6 lb – 22 lb), Infant Finger/great toe sensor for patient size > 10 kg (22 lb), Adult	

NBP accessories

Reusable Easy Care cuffs

Part number	Description
M4559B	Thigh
M4558B	Large adult, extra-long
M4557B	Large adult
M4556B	Adult, extra-long
M4555B	Adult
M4554B	Small adult
M4553B	Pediatric
M4552B	Infant

Reusable Comfort Care Cuffs

Part number	Description
M1571A	Infant
M1572A	Pediatric
M1573A	Small Adult
M1574A	Adult
M1575A	Large Adult
M1576A	Thigh

Multi Care cuffs

Part number	Description
989803183311	Infant
989803183321	Pediatric
989803183331	Small Adult
989803183351	Adult XL
989803183361	Large Adult
989803183371	Thigh

Disposable Gentle Care cuffs

Part number	Description
M4578B	Large adult, extra-long
M4577B	Large adult
M4576B	Adult, extra-long
M4575B	Adult
M4574B	Small adult
M4573B	Pediatric
M4572B	Infant

Disposable neonatal cuffs (safety connector)*

Part number	Description
M1866B	Size 1
M1868B	Size 2
M1870B	Size 3
M1872B	Size 4
M1873B	Size 5 infant

Disposable soft neonatal cuffs (safety connector)*

Part number	Description
M1866S	Size 1
M1868S	Size 2
M1870S	Size 3
M1872S	Size 4
M1873S	Size 5 infant

Disposable single cuffs

Part number	Description
989803182321	Large adult
989803182311	Adult, extra-long
989803182301	Adult
989803182291	Small adult
989803182281	Pediatric

NBP air hoses

Part number	Description
M1598B	NBP hose, 1.5 m
M1599B	NBP hose, 3.0 m
M1596C	Disposable neonatal (regular and soft) NBP hose, 1.5 m
M1597C	Disposable neonatal (regular and soft) NBP hose, 3.0 m

IBP accessories

863333	Efficia dual IBP module

Reusable transducers

Part number	Description
CPJ840J6**	Reusable pressure transducer, 5 µV/V/mmHg sensitivity
CPJ84022**	Single-use sterile domes (50/case)

Edwards Lifesciences Pressure Transducers and Accessories***

Part number	Description
PX1800-896083021	TruWave reusable pressure monitoring cable, cable length: 13ft.
TCLIP05	TruClip holder
PX260	Single TruWave pressure monitoring sets, 150cm

* The safety connector cuffs and air hoses may not be available in all countries. Check with your local sales organization.

** ICU medical part number

***The Edwards cables are compatible with the monitors manufactured after January 1, 2019 and IBP modules.

Microstream CO_2 accessories

863335	Efficia Microstream CO_2 module

Intubated sampling lines

Part number	Description
989803223361	Microstream™ Advance Adult-Pediatric Intubated Filter Line, Short-term use, 2m
989803223371	Microstream™ Advance Adult-Pediatric Intubated Filter Line, Extended Duration, 2m
989803223381	Microstream™ Advance Neonatal-Infant Intubated Filter Line, Extended Duration, 2m
989803223291	Microstream™ Advance Adult-Pediatric Intubated Filter Line, High Humidity, 2m
989803223301	Microstream™ Advance Neonatal-Infant Intubated Filter Line, High Humidity, 2m
989803223311	Microstream™ Advance Adult-Pediatric Intubated Filter Line, Short-term use, 4m
989803223321	Microstream™ Advance Adult-Pediatric Intubated Filter Line, Extended Duration, 4m
989803223331	Microstream™ Advance Neonatal-Infant Intubated Filter Line, Extended Duration, 4m

Non-intubated oral/nasal sampling lines

Part number	Description
989803223581	Microstream™ Advance Pediatric Oral-Nasal Filter Line with O2 Tubing, Short-term use, 2m
989803223591	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 Tubing, Short-term use, 2m
989803223391	Microstream™ Advance Pediatric Oral-Nasal Filter Line, Short-term use, 2m
989803223601	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 connector, Short-term use: Procedural/Emergency, 2m
989803223441	Microstream™ Advance Pediatric Oral-Nasal Filter Line with O2 Tubing, Short-term use, 4m
989803223451	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 Tubing, Short-term use, 4m
989803223461	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 connector, Short-term use: Procedural/Emergency, 4m
989803223521	Microstream™ Advance Adult-Intermediate Bite Block Filter Line , Short-term use
989803223531	Microstream™ Advance Adult-Intermediate Bite Block Filter Line with O2 Tubing, Short-term use, 2m
989803223541	Microstream™ Advance Adult-Intermediate Bite Block Filter Line with O2 Tubing, Short-term use, 4m

Non-intubated oral/nasal sampling lines

Part number	Description
989803223471	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 Tubing, Extended Duration, 2m
989803223491	Microstream™ Advance Pediatric Oral-Nasal Filter Line with O2 Tubing, Extended Duration, 2m
989803223481	Microstream™ Advance Adult Oral-Nasal Filter Line with O2 Tubing, Extended Duration, 4m
989803223501	Microstream™ Advance Pediatric Oral-Nasal Filter Line with O2 Tubing, Extended Duration, 4m

Non-intubated nasal sampling lines

Part number	Description
M4687A	NIV Line, pediatric
989803178021	CapnoLine, nasal, infant/neonatal
M4691A	CapnoLine H, nasal, infant/neonatal
989803223611	Microstream™ Advance Adult Nasal Filter Line with O2 Tubing, Extended Duration, 2m
989803223621	Microstream™ Advance Pediatric Nasal Filter Line with O2 Tubing, Extended Duration, 2m
989803223511	Microstream™ Advance Neonatal-Infant Nasal Filter Line with O2 Tubing, Extended Duration, 3m
989803223421	Microstream™ Advance Adult Nasal Filter Line, Extended Duration, 2m
989803223431	Microstream™ Advance Neonatal-Infant Nasal Filter Line, Extended Duration, 2m
989803223341	Microstream™ Advance Neonatal-Infant Nasal Filter Line, Extended Duration, 4m
989803223411	Microstream™ Advance Adult Nasal Filter Line, 2m
989803223401	Microstream™ Advance Pediatric Nasal Filter Line, 2m
989803223351	Nasal FilterLine Infant/Neonatal
989803223551	Microstream™ Advance Adult Nasal Filter Line with O2 Tubing, Short-term use, 2m
989803223561	Microstream™ Advance Adult Nasal Filter Line with O2 Tubing, Short-term use, 4m
989803223571	Microstream™ Advance Pediatric Nasal Filter Line with O2 Tubing, Short-term use, 2m

LoFlo Sidestream CO_2 accessories

Part number	Description
M2741A	Sidestream CO2 Sensor
1022054 (for Brazil only)	Loflo Sidestream CO2 Sensor
989803206611	CO2 Nasal Cannula, Adult
989803206621	CO2 Nasal Cannula, Pediatric
989803206631	CO2 Nasal Cannula, Infant
989803206641	CO2/O2 Nasal Cannula, Adult
989803206651	CO2/O2 Nasal Cannula, Pediatric
989803144471	CO2/O2 Nasal Cannula, Infant
989803206671	CO2 Oral-Nasal Cannula, Adult
989803206681	CO2 Oral-Nasal Cannula, Pediatric
989803206691	CO2/O2 Oral-Nasal Cannula, Adult
989803206701	CO2/O2 Oral-Nasal Cannula, Pediatric
989803206711	Airway Adapter Set, ET > 4.0 mm
989803206721	Airway Adapter Set, ET =< 4.0 mm
989803206731	Airway Adapter Set H, ET > 4.0 mm
989803206741	Airway Adapter Set H, ET =< 4.0 mm
989803206751	Straight Sample Line
989803206761	Straight Sample Line H
989803199061	LoFlo Extension Line, 60

CapnoTrak Sidestream CO_2 accessories

Part number	Description
989803198891	CO_2 nasal cannula, large
989803198901	CO_2 nasal cannula, medium
989803198911	CO_2 nasal cannula, small
989803198921	CO_2/O_2 nasal cannula, large
989803198931	CO_2/O_2 nasal cannula, medium
989803198941	CO_2/O_2 nasal cannula, small
989803198961	CO_2 oral nasal cannula, large
989803198971	CO_2 oral nasal cannula, medium
989803198981	CO_2/O_2 oral nasal cannula, large
989803198991	CO_2/O_2 oral nasal cannula, medium
989803199001	Airway adapter set, ET > 4.0 mm
989803199011	Airway adapter set, ET ≤ 4.0 mm
989803199021	Water filter assembly
989803199031	CO_2 sampling extension line
989803199041	O_2 delivery extension line

Mainstream CO_2 accessories

Part number	Description
M2501A	CO_2 sensor
M2513A	Airway adapter, reusable, adult/pediatric
M2516A	Airway adapter, reusable, infant/neonatal
M2533A	Airway adapter, disposable, adult/pediatric
M2536A	Airway adapter, disposable, infant/neonatal

Efficia rack and accessories

Part number	Description
863330	Efficia rack
989803197811	Power USB cable, 1 m
989803197801	Power USB cable, 1.8 m
989803198311	Wall mount kit
989803199711	Pole clamp kit

Efficia BIS module accessories

863332	Efficia BIS module

Part number	Description
863332 #B01 (Medtronic PN 186-0195-PH)	BIS module, BIS device with sensor starter pack (5x Quatro/four-electrode sensor)
863332 #B01 #K20 (Medtronic PN 186-0195-PH)	BIS module, BIS device with sensor starter pack (5x Quatro/four-electrode sensor) and a case of sensors (50x Quatro/four-electrode sensor)
863332 #B02 (Medtronic PN 186-0224-PH)	BIS module, BIS device with sensor starter pack (5x Quatro/four-electrode sensor)
863332 #B02 #K20 (Medtronic PN 186-0224-PH)	BIS module, BIS device with sensor starter pack (5x Quatro/four-electrode sensor) and a case of sensors (50x Quatro/four-electrode sensor)
863332 #B02 #K22 (Medtronic PN 186-0224-PH)	BIS module, BIS device with sensor starter pack (5x Quatro/four-electrode sensor), and a case of bilateral sensors (10x bilateral sensor)

Efficia gas module accessories

863334	Efficia gas module (with O_2 and dual agent identification
863336	Efficia gas module (without O_2 or manual agent identification)

Part number	Description
989803191081	Water trap
M1658A	Gas sample line, 2.6 m
13902A	Elbow airway adapter
M1612A	Straight airway adapter
M1655B	Gas exhaust return line
M1656B	Gas exhaust return filter

Efficia Cardiac Output module accessories

863387	Cardiac Output module
Part number	**Description**
863387 #P01	PiCCO continuous C.O. option
M1643A	Cardiac output interface cable
45356490661	PiCCO temperature probe
PV8203*	PiCCO monitoring kit, 30 cm pressure line, includes PV4046* injectate temperature sensor housing for 45356490661
PV8215*	PiCCO monitoring kit, 150 cm pressure line, includes PV4046* injectate temperature sensor housing for 45356490661
PV8215CVP*	PiCCO monitoring kit, 150 cm pressure line, includes PV4046* injectate temperature sensor housing for 45356490661 and central venous pressure line
PMK 206*	PULSION pressure interface cable for disposable pressure transducer

Cardiac output accessories

Part number	Description
M1642A	Cardiac output interface cable
M1643A	Cardiac output interface cable
23001A	CO-Set injectate temperature probe, reusable, 2.4 m
23001B	CO-Set injectate temperature probe, reusable, 0.5 m
23002A	Temperature probe, ice bath

* PULSION Medical Systems part number

Temperature accessories

Reusable probes (EMC 3rd edition compliant probes)

Part number	Description
21075A	Esophageal/rectal probe (12 Fr)
21076A	Esophageal/rectal probe (10 Fr)
21078A	Attachable skin surface probe

Disposable probes (EMC 3rd edition compliant probes)

Part number	Description
21091A	Skin surface probe
M1837A	Esophageal/rectal probe 9 Fr
21090A	Esophageal/rectal probe 12 Fr
21093A	Esophageal stethoscope probe 12 Fr
21094A	Esophageal stethoscope probe 18 Fr
21095A	Esophageal stethoscope probe 24 Fr
M2255A	Foley with temperature probe 14 Fr
21096A	Foley with temperature probe 16 Fr
21097A	Foley with temperature probe 18 Fr
21082B	Adapter 1.5 m
21082A	Adapter 3.0 m

Reusable probes (EMC 4th edition compliant probes)

Part number	Description
989803203561	Esophageal/Rectal Temperature Probe, 12 FR
989803203571	Esophageal/Rectal Temperature Probe, 10 FR
989803203581	Skin Surface Temperature Probe

Disposable probes (EMC 4th edition compliant probes)

Part number	Description
989803203601	Esophageal/Rectal Temperature Probe, 9FR
989803203611	Esophageal/Rectal Temperature Probe,12FR
989803203621	Skin Surface Temp Probe
989803203631	Esophageal/Stetho Temp Probe 12 FR
989803203641	Esophageal/Stetho Temp Probe 18 FR
989803203651	Esophageal/Stetho Temp Probe 24 FR
989803203661	Foley Catheter Temperature Probe 14 FR
989803203671	Foley Catheter Temperature Probe 16 FR
989803203681	Foley Catheter Temperature Probe 18 FR

Adapter Cables (EMC 4th edition compliant probes)

Part number	Description
989803203701	Adapter cable temperature 3m (10')
989803203711	Adapter cable temperature 1,5m (5')

Miscellaneous accessories

Part number	Description
989803176611	2D HS-1 barcode reader (includes mounting arm for use with roll stand)
989803147821	2D Bar code reader
989803217551	USB Barcode scanner
989803199221	Lithium-ion battery, 9-cell battery pack
989803194541	Lithium-ion battery, 9-cell battery pack
989803219201	Lithium-ion battery, 9-cell battery pack
989803206541	Roll stand
989803195541	Roll Stand Mounting Kit
989803176601	Roll stand
989803136891	Recorder paper (5 rolls)
989803159601	Serial interface adapter
989803148841	Cable management kit
989803195551	Cable Hook Kit
989803198321 (for Brazil only)	Dixtal/Efficia Rack Universal Clamp Kit
989803195571	Wall mount, 10-inch
989803152951	Wall channel

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