PHILIPS

IntelliVue

MX100

2.1.

For reliable information on the move, the MX100 stands alone

Philips 867033 technical data sheet

Release P.0

The IntelliVue MX100 monitor provides a comprehensive set of basic physiological measurements, with a color touchscreen display. The state-of-the-art display with its modern multi-touch screen allows easy interaction by sliding and tapping with one or two fingers – smartphone style.

Chemically resistant housing together with Antimicrobial Corning Gorilla Glass designed for improved damage resistance, make the MX100 a robust monitor designed to withstand challenges associated with in-hospital and out-of-hospital[1] mobile monitoring.

5.1. The MX100 helps provide best possible care for patients across all levels of acuity and supports institution-wide standardization.

5.2. 5.4. The MX100 can simultaneously monitor ECG (using 3-, 5-, 6-, or 10-lead sets, including arrhythmia and ST monitoring), 5.5. respiration, SpO_2, NBP, two invasive pressures, temperature, and 5.6. CO_2.

Through networking, the monitor provides information integration, documentation, and information access. The MX100 can be used with adult, pediatric, and neonatal patients in a hospital environment, during patient transport inside hospitals, and during out-of-hospital[1] patient transport.

The monitor stores data in trend databases. You can see tabular trends (vital signs) and document them on a printer connected to a central station. You can view measurement trend graphs, including horizon trends, to help you identify changes in the patient's physiological condition.

The monitor can operate using battery power for over five hours – in a basic monitoring configuration – to let you reliably monitor patients during procedures, in-hospital transfers, or out-of-hospital[2] patient transports.

The MX100 is powered from one of the following sources:

- A user-exchangeable rechargeable battery.
- AC mains using the docking solution IntelliVue Dock (867043), or the External Power Supply (M8023A[3]).

During in-hospital transport the measurement extensions (867039, 867040, and 867041) are powered by the MX100.

Measurement features

- Compact, rugged, lightweight monitor with a comprehensive set of built-in clinical measurements.
- ECG monitoring using any combination of 3 to 10 electrodes.
- 12-lead ECG monitoring with five electrodes using the EASI

1. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

2. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

3.Not available in all countries, check with your local Philips representative for further details

placement method, with six electrodes using the Hexad placement method, or with 10 electrodes using conventional electrode placement.

- Multi-lead arrhythmia, and ST segment analysis at the bedside on all available leads.
- Mainstream/sidestream CO_2
- Dual[1] invasive pressure, and a temperature measurement.
- Choice of Philips FAST SpO_2, Nellcor[2] OxiMax SpO_2, Masimo[3] rainbow SET SpO_2.
- With the Masimo rainbow SET technology, the measurement device has options to monitor SpCO, SpMet, SpHb/SpOC, PVI, and rainbow Acoustic Respiration Rate (RRac) measurements.
- IntelliVue XDS Database, enables the collection and storage of vital signs information (numeric data only - no waves), for example, heart rate, pressure, ... on an external SQL database.

Usability features

2.2.
- Capacitive multi-touchscreen as input device.
- Intuitive smartphone-style operation.

2.3.
- 6.1 inch state-of-the-art TFT flat-panel display with 1024 x 480 resolution, wide viewing angle, large numerics, permanently visible alarm limits[4], and up to five real-time waves. 2.4.
- Ambient Light Sensor for optimal backlight brightness.
- Multiple screen layouts to adapt to various clinical scenarios.
- Screen layouts are easily adjustable, allowing flexible display of measurement information.
- The monitor can be used in either the vertical or horizontal position, the display adapts to the orientation.
- Simple menu hierarchy and customizable SmartKeys provide fast access to all primary monitoring tasks.
- Temperature, height, and weight can be configured in metric or imperial units. Pressure measurements can be displayed in kPa or mmHg. Gases can be displayed in kPa, or mmHg.
- Patient data management with tabular and graphic trends.
- Settings "Profiles" for rapid case turnover, while Patented "AutoLimits" help caregivers manage alarms more effectively.
- Timers application lets you define and set clinical timers to notify you when a specific time period has expired.
- Capable of functioning in a wireless infrastructure (Smart-hopping - 1.4 GHz, 2.4 GHz or WLAN).
- Additional independent display capability using IntelliVue XDS Remote Display.
- Bedside information access using the IntelliVue XDS Clinical Workstation.
- Ergonomic carrying handle and user exchangeable battery.
- Alarm Advisor provides feedback on recurring and continuous alarm limit violations, helping clinicians to adapt alarm limits more specifically for individual patients.

Cybersecurity features

- Encrypted transmission of report data using node authentication.
- Encrypted storage of sensitive patient information.
- End-to-end data encryption of the communication between the patient monitor and an Information Center (PIC iX) or XDS Software.
- The main cryptographic functions of the patient monitors are FIPS 140-2 validated.

User authentication

User authentication, in which users have to authenticate themselves using a user ID and a password/PIN, is available for different workflows:

- **Standard functionality**: Users must log on to access the standard functionality of the monitor.
- **Alarm limits**: Users must log on before changing the alarm limits of measurements.
- **Measurement alarms**: Users must log on before turning measurement alarms on and off.
- **Emergency login**: Only authenticated users are allowed to acknowledge emergency login notifications.
- **Find patients**: Users must log on to use the Find Patient functionality (only available if a PIC iX is connected).

Indications for use

The monitor is indicated for use by health care professionals whenever there is a need for monitoring the physiological parameters of patients.

The monitor is intended to be used for monitoring and recording of, and to generate alarms for, multiple physiological parameters of adults, pediatrics, and neonates. The monitor is intended for use by trained health care professionals in a hospital environment.

The monitor is also intended for use during patient transport inside the hospital environment.

The monitor is only for use on one patient at a time. It is not intended for home use. Not a therapeutic device. The monitor is for prescription use only.

Rx only: U.S. Federal Law restricts this device to sale by or on the order of a physician).

The ECG measurement is intended to be used for diagnostic recording of rhythm and detailed morphology of complex cardiac complexes (according to AAMI EC11).

ST segment monitoring is intended for use with adult patients only and is not clinically validated for use with neonatal and pediatric patients.

The Integrated Pulmonary Index (IPI) is intended for use with adult and pediatric (1 to 12 years) patients only. The IPI is an adjunct to and not intended to replace vital sign monitoring.

The derived measurement Pulse Pressure Variation (PPV)[5] is intended for use with sedated patients receiving controlled mechanical ventilation and mainly free from arrhythmia. The PPV measurement has been validated only for adult patients.

1. Enabling dual pressure capability requires the use of a dual pressure cable or dual pressure adapter. See "Invasive pressure accessories" on page 26 for related options

2. The following are trademarks and registered trademarks of a Medtronic company: Nellcor, OxiMax

3. The following are trademarks and registered trademarks of the Masimo Corporation: Masimo, SET, rainbow, rainbow acoustic

4. Dependent on screen layout

5. Not available in the USA and territories relying on FDA market clearance

The Masimo rainbow SET measurement is indicated for the noninvasive monitoring of functional oxygen saturation of arterial hemoglobin (SpO_2), pulse rate, carboxyhemoglobin saturation (SpCO), methemoglobin saturation (SpMet), total hemoglobin concentration (SpHb), and/or respiratory rate (RRac). The Masimo rainbow SET measurement is indicated for use during both no motion and motion conditions, and for patients who are well or poorly perfused.

Hospital environment

The monitor is suitable for use in all medically used rooms which fulfill the requirements regarding electrical installation according to IEC 60364-7-710 "Requirements for special installations or locations - Medical locations", or corresponding local regulations.

Out-of-hospital transport

The option #E60[1] allows the use of the IntelliVue MX100 Patient Monitor and the 867041 Microstream Extension for out-of-hospital transport (limited to ground transport, not including helicopters and aircrafts). Devices with the out-of-hospital transport feature have white parameter covers and are marked with either the out-of-hospital symbol or the text "out-of-hospital transport",

Wireless functionality is restricted to use inside the hospital. For out-of-hospital transport only a LAN connection is permitted.

Main components

Monitor

The monitor has a color TFT display with a wide viewing angle, providing high-resolution waveform and data presentation. The display, processing unit, and measurements are integrated into one device.

Remote Display

IntelliVue XDS Remote Display allows the remote display of an IntelliVue Patient Monitor[2] on a PC connected to the same network. It can be configured to allow remote operation of the patient monitor. It is intended to be used as an additional independent display for viewing and operation by clinicians and nurses.

User interface

The color graphical user interface is designed for fast and intuitive operation, and ensures clinicians quickly feel at ease using the monitor.

- Configurable SmartKeys with intuitive icons allow monitoring tasks to be performed quickly and easily, directly on the monitor screen.
- Waves and numerics are color coded, colors are customizable.
- The monitor displays up to five waves simultaneously. For 12-lead ECG monitoring, it can display 12 real-time ECG waves, with a rhythm strip and all ST values.
- Flexible screen layout allows you to quickly adapt to different clinical scenarios, for example, from your standard monitoring screen, to for example, a Big Numerics screen, or 12-lead monitoring to acquire a diagnostic 12-lead ECG.
- Change to a different screen layout by simply swiping - with two fingers - across the screen.
- The Basic Help provides on-screen operating help, explaining INOP and alarm messages.
- Screen content automatically adjusts to the monitor orientation. 2.5.

- Usability evaluated through usability study conducted by an independent human factors consulting group.

Touchscreen

The monitor is supplied with a capacitive multi-touchscreen. Touch a screen element to get to the actions linked to that element, for example, touch a measurement numeric and the setup menu for that measurement opens. Touch a wave to enter the setup menu for that wave. To scroll through lists and menus you can "swipe" over the screen, as per a smartphone. The touchscreen supports the use of medical gloves.

On-screen keyboard

If alpha or numeric data entry is required, for example to enter patient demographics, an on-screen keyboard automatically appears on the screen.

Mounting

The mounting options available enable flexible, space saving placement of the monitor for an ergonomic work space.

- **Bedhanger Mount:** Ideally suited for mounting the IntelliVue MX100 during in-hospital patient transport. When mounted the monitor is facing upwards to support direct access to the monitor screen.
- **Fix Clamp Mount:** Ideally suited for mounting the IntelliVue MX100 for stationary use to, for example, an IV pole or wall-mounted rail.
- **Rotatable Quick Claw Mount:** Ideally suited for mounting the IntelliVue MX100 during or following in-hospital patient transport. Enables quick release and supports the rotation of the mounted monitor.
- **Ambulance Mount**: Recommended mounting solution for the IntelliVue MX100 during out-of-hospital[3] patient transport within a road ambulance.[4]
- **Mounting Wedge**: A mounting wedge is available which can be connected to an IntelliVue Dock. Using this mounting wedge can help adjust the position of a docked MX100 to improve the

1. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.
2. Requires the relevant IntelliVue XDS options to be installed on either the patient monitor, or on a PC running the IntelliVue XDS Software with an activated license. For details, see the IntelliVue XDS Software technical data sheet.
3. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.
4. You can order the Ambulance Mount directly from Philips Technology Solutions with the part number 9898 0320 7751, or from GCX.

visibility of the monitor display.

- **Release Lock**: By using the Release Lock, you can secure the MX100 to the IntelliVue Dock to avoid accidental removal. Note that if you secure the monitor to the IntelliVue Dock, you will no longer be able to remove the monitor quickly by simply undocking it.

Extending measurements

The MX100 is compatible with Philips measurement extensions. The extensions allow you to add specific measurements to those already integrated into the MX100. The measurement extensions connect to the MX100 and use the MX100 settings. Trend data and measurement settings from the measurements in the extensions are stored in the MX100.

Measurement extensions

- The **867039 Hemodynamic extension**[1]: Adds temperature, and two pressures.
- The **867040 Capnography extension**[3]: Adds mainstream/sidestream capnography, and optionally temperature, and two pressures.
- The **867041 Microstream CO_2 extension**[3]: Adds Microstream capnography, and optionally temperature, and two pressures.
- The **M3012A Hemodynamic extension**[2]: Adds temperature, pressure, an additional pressure or a temperature.
- The **M3014A Capnography extension**[4]: Adds mainstream or sidestream capnography, and optionally one pressure plus either a pressure or a temperature.
- The **M3015A Microstream CO_2 extension**[3], [4]: Adds Microstream CO_2, and optionally either pressure or temperature.
- The **M3015B Microstream CO_2 extension**[2]: Adds Microstream CO_2, two pressures, and a temperature.

Measurements from the M3012A, M3014A, and M3015A[3]/B measurement extensions are only available when the extension is connected to an MX100, and this is running on external power. This is the case when the MX100 is connected to:

- An IntelliVue Dock (867043)
- The External Power Supply (M8023A[5])

Applications for specific care settings

Critical and cardiac care features

- The monitor performs multi-lead **arrhythmia analysis** on the patient's ECG waveform at the bedside. It analyzes for ventricular arrhythmias, calculates heart rate, and generates alarms, including asystole, bradycardia, ventricular and atrial fibrillation.
- Up to 12 leads of **ST segment analysis** can be performed on adult patients at the bedside, measuring ST segment elevation and depression, and generating alarms and events. The user can trend ST changes, set high and low alarm limits, and set both ST and isoelectric measurement points. ST points can be set either relative to the J-point or directly by selecting a numeric value. Using ST Snippets, one-second wave segments can be compared with a baseline segment for each measured ST lead. The monitor also offers independent ST Elevation (STE) analysis and alarming using automated ISO and J-point determination and measuring the ST segment directly at the J-point (J +0). This is based on the recommendations for measuring ST Elevation published by the American Heart Association, the American College of Cardiology and the European Society of Cardiology.
- **QT/QTc interval monitoring** provides the measured QT interval, the calculated heart-rate corrected QTc value, and a ΔQTc value, which tracks variation in the QT interval in relation to a baseline value.
- **ST Map** application shows ST changes over time in two multi-axis spider diagrams.
- **STE Map** adds gender-specific STE (ST Elevation) limits to ST Map. ST values violating these limits are indicated in red.
- Optional **12-lead ECG** data can be measured in diagnostic quality using conventional electrode placement with 10 electrodes. Alternatively it can be measured using the EASI lead system with five electrodes in EASI placement, or the Hexad lead system with six electrodes in standard placement[6].
- 12 real-time ECG waveforms can be displayed simultaneously. Diagnostic 12-lead ECG can be captured, reviewed, and stored on the patient monitor before it is sent to the Information Center. Local printout is available, in harmonized layout.
- An **ECG lead diagram** view provides assistance for the correct positioning of electrodes and information about the electrodes' skin contact.
- Pulse oximetry technologies perform accurately even in cases with low perfusion.[7]
- Choice of sidestream or mainstream CO_2 monitoring for measurements with intubated and non-intubated patients.
- Integrated Pulmonary Index (IPI) enables clinicians to quickly and easily assess a patient's ventilatory status and monitor changes in a patient's condition, facilitating more timely interventions.
- Pulse Pressure Variation (PPV)[8] is calculated from beat-to-beat arterial pressure values. Pulse pressure is the difference between the systolic and the diastolic pressure values for a single beat. Pulse pressure variation is defined as the maximal pressure less the minimum pressure divided by the average of these two pressures.

Trends

Trends are patient data collected over time and displayed in

5.3.

1. The measurement extensions 867039, 867040, and 867041 are powered from the MX100 internal battery during transport.
2. The measurement extensions M3012A, M3014A, and M3015A/B only function when the monitor is connected to an external power supply.
3. The M3015A Microstream CO_2 Measurement Extension with Hardware B (indicated by serial number prefix DE435; year of last manufacture: 2011) cannot be used with the IntelliVue MX100.
4. The measurement extensions M3012A, M3014A, and M3015A/B only function when the monitor is connected to an external power supply.
5. Not available in all countries, check with your local Philips representative for further details
6. EASI/Hexad-derived 12-lead ECGs and their measurements are approximations to conventional 12-lead ECGs. As the 12-lead ECG derived with EASI/Hexad is not exactly identical to the 12-lead conventional ECG obtained from an electrocardiograph, it should not be used for diagnostic purposes.
7. For more information, see the SpO_2 specification tables starting on page 15, and the Application Note "Validation of Philips FAST SpO_2 measurement accuracy".
8. Not available in the USA and territories relying on FDA market clearance.

graphic, tabular or histogram form to give you a picture of how your patient's condition is developing. Trend information is stored in the trends database for continuously-monitored measurements, such as ECG, as well as for aperiodically measured parameters, such as noninvasive blood pressure.

- The **Trends database** stores patient data from up to 50 individual measurement parameters. The measurement information can be sampled every 12 seconds, 1 minute, or 5 minutes, and stored for a period ranging from 4 to 48 hours.

  Each NBP measurement generates a column in the Vital Signs trend table. The values for the other measurements are added to provide a complete vital signs set for the NBP measurement time.

- **Horizon Trends** provide a graphical representation of changes to a patient's measurements to make information clearer at a glance.

Transport features

- The compact portable design offers in-hospital and out-of-hospital[1] transport across all levels of patient monitoring, simply unplug and go.
- Specially-designed mounting solutions let you quickly disconnect the monitor for transport and reconnect to the mount after transport.
- The universal admission/discharge/transfer (ADT) feature means that all ADT information is shared between the networked monitor and the Information Center. Information need only be entered once.
- The monitor can operate using battery power for over five hours - in a basic monitoring configuration - to let you reliably monitor patients during procedures, in-hospital transfers, or out-of-hospital[1] patient transports.
- During in-hospital transport, the monitor powers the measurement extensions (867039, 867040, and 867041), but **not** the measurement extensions M3012A, M3014A, M3015A[2], and M3015B.
- In combination with the option #E60[3], the MX100 and the 867041 measurement extension can be used in out-of-hospital transport.
- Enhanced ruggedness due to:
  - Ruggedized structural design
  - Deploying chemically resistant housing materials designed to resist deterioration from cleaning and disinfection agents
  - Antimicrobial Corning Gorilla Glass[4]
  - Improved ingress protection

Patient data documentation

- An extensive range of Patient Reports can be printed:
  - 12-lead ECG Reports
  - Alarm Limit Reports
  - Vital Signs
  - Graphic Trends
  - Real-time Wave Reports
- Report templates can be defined in advance, enabling print-outs tailored to each hospital's specific requirements to be started quickly. Reports can be printed on a printer connected to a central station, or via the IntelliVue XDS Printing Service, and they can be initiated manually or automatically at user-defined intervals.
- The IntelliVue XDS Printing Service allows printing of reports, waveform captures, and trends from the monitor to an off-the-shelf printer or to an electronic file.

Alarms

The alarm system can be configured to present the traditional HP/Agilent/Philips alarm sounds, Philips 2021 alarm sounds, or sounds compliant with the latest IEC 60601-1-8 standard.

Dependent on the screen layout, alarm limits are permanently visible on the main screen. When an alarm limit is exceeded, it is signaled by the monitor in the following ways:

- An alarm tone sounds, graded according to severity.
- An alarm message is shown on the screen, color-coded according to severity.
- The background of the alarming measurement numeric flashes on the screen. Alternatively, only the numeric of the alarming measurement flashes.
- Alarm lamps flash for red and yellow alarms and are illuminated for technical INOPs.

The alarm-limit review page offers an overview of alarm limit settings and the possibility to modify these settings for all parameters.

A **Smart Alarm Delay** feature helps to reduce the number of pulse oximetry nuisance alarms.

If the monitor is connected via a network to the Information Center, alarming is simultaneous at the monitor and at the Information Center.

Alarms are graded and prioritized according to severity:

- **Red Alarms***** identify a potentially life-threatening situation for a patient.
- **Yellow Alarms**** indicate conditions violating preset vital-signs limits.
- **Yellow Alarms*** indicate arrhythmia alarms.
- **Technical Alarms (INOPs)** are triggered by signal quality problems, equipment malfunction, or equipment disconnect.

- The Acknowledge key allows you to switch off alarm tones with one touch while retaining visual alarm messages.
- Once all alarms have been acknowledged, the Acknowledge key automatically changes to the Pause Alarms/Alarms Off key. Using this key, all alarms can be paused indefinitely, or for one, two, three, five, or 10 minutes, depending on the monitor configuration.
- Electronic strip recording allows alarm-triggered and manually started electronic strips to be captured in the monitor database and printed in the form of reports when a printer is available. The strips can be sent to an Information Center or to the XDS

1. Only with option E60. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.
2. The M3015A Microstream CO_2 Measurement Extension with Hardware B (indicated by serial number prefix DE435; year of last manufacture: 2011) cannot be used with the IntelliVue MX100.
3. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.
4. See the Product Information Sheet: https://www.corning.com/content/dam/corning/microsites/csm/gorillaglass/PI_Sheets/CGG_PI_Sheet_Anitimicrobia_Gorilla_Glass.pdf

Printing Service that is part of the IntelliVue XDS Application. The reports can then be printed to a standard off-the-shelf printer and can also be stored as files on the Information Center or the PC hosting the XDS Printing Service. For printing the MX100 must be connected to an M8023A[1] external power supply, or a 867043 IntelliVue Dock.

- Patented "AutoLimits" help caregivers to manage alarms more effectively, automatically adapting the alarm limits to the patient's currently measured vital signs within a safe margin defined individually for each patient.
- Visual and/or audible latching and non-latching alarm handling is available.

Alarm advisor

Alarm advisor provides feedback on recurring and continuous alarm limit violations. The information provided helps the clinician in adapting alarm limits more specifically for individual patients. Alarm advisor can be enabled for:

- HR (low and high limit alarm, yellow and short yellow).
- PVCs/minute (high limit alarm).
- SpO_2 (low and high limit alarm).
- Pressure - ART, ABP, Ao, P (low and high limit alarm).
- RR (low and high limit alarm).
- awRR (low and high limit alarm).

Alarm advisor can be switched on and off for each individual alarm (for example, for an SpO_2 low alarm, an HR low alarm, and so on).

Profiles

Profiles are predefined configuration settings for screens, measurement settings, and monitor properties. Each profile can be designed for a specific application area and patient category, for example OR adult, or ICU neonatal. Profiles enable a quick reaction to patient and care location changes: Activating a profile with a particular patient category (adult, pediatric, or neonatal) automatically applies suitable alarm and safety limits and saves time usually spent carrying out a complete set-up procedure.

A selection of profiles for common monitoring situations is provided with the monitor.

Profiles can also be created directly on the monitor or remotely on a PC and transferred to the monitor using the IntelliVue Support Tool Mark2.

Networking capabilities

Network interface

The network interface provides the system with networking capability via a wired connection (LAN) when connected to the 867043 IntelliVue Dock, or the M8023A[2] external power supply (option E27), or via a wireless network connection as described below.

Wireless network

The monitor can function within a wireless infrastructure based on an IEEE 802.11a/b/g/n network in the 2.4 GHz/5 GHz bands (ISM). Also, the monitor can function within the proprietary Philips IntelliVue Smart-hopping Network in the 1.4/2.4 GHz band[3].

Additional components are required to complete the system. See the IntelliVue Smart-hopping Network (865346) documentation for further information.

Optional networking capabilities

The monitor can operate as part of a networked system (wired/wireless) using the Philips IntelliVue Clinical Network interface.

This includes:

- DHCP/BOOTP
- QoS Tagging
- WMM on wireless networks.
- 802.11 WLAN, or Smart-hopping Interface (1.4 GHz or 2.4 GHz)[2]

Device connections

The monitor can be connected to:

- Measurement extensions[4] (867039, 867040, 867041)
- Measurement extensions[5] (M3012A, M3014A, M3015A[6]/B)
- An IntelliVue Dock (867043)
- An external power supply (M8023A[7])
- An Information Center (for example, PIIC iX)
- A PC running the IntelliVue XDS Software[8]

XDS Software

IntelliVue XDS Software is a set of applications that extends patient monitoring capabilities via the use of PC clients:

Provides remote display and control capabilities for IntelliVue Patient Monitors: Not a duplicate display solution, but an independent remote patient monitoring display solution with display and control capabilities.

Provides digital and paper printing services: The reports can be printed on any XDS controlled printer. Alternatively the report can be stored on a file system (PDF, PNG, JPG, TIF, GIF and BMP formats)

Provides data acquisition and storage services: The XDS Database collects and stores vital signs information (numeric data only - no waves) from one connected monitor, for example, HR, pressure, and so forth. The database can be used by

1. Not available in all countries, check with your local Philips representative for further details
2. Not available in all countries, check with your local Philips representative for further details
3. The Smart-hopping interface options are not available in all countries; check with your local Philips representative for further details.
4. The measurement extensions 867039, 867040, and 867041 are powered from the MX100 internal battery during transport.
5. The measurement extensions M3012A, M3014A, and M3015A/B only function when the monitor is connected to an external power supply
6. The M3015A Microstream CO_2 Measurement Extension with Hardware B (indicated by serial number prefix DE435; year of last manufacture: 2011) cannot be used with the IntelliVue MX100.
7. Not available in all countries, check with your local Philips representative for further details
8. Requires the relevant IntelliVue XDS options to be installed on either the patient monitor, or on a PC running the IntelliVue XDS Software with an activated license. For details, see the IntelliVue XDS Software technical data sheet.

other applications that require continuous access to patient monitoring data. The database can be queried using SQL.

Provides fast, convenient access to clinical information: The Clinical Workstation solution enhances the functionality of Philips high-acuity IntelliVue monitors by providing fast, convenient access to patient-focused clinical information from hospital information systems.

Service features

A password-protected service mode ensures only trained staff can access service tests and tasks.

A password-protected configuration mode allows trained users to customize the monitor configuration.

Upgradability

The monitor allows new capabilities to be added in the future as your monitoring requirements evolve. This upgradability gives the security of knowing that the monitors can be enhanced and updated as practices and technologies advance, and it protects long-term investments.

IntelliVue Support Tool Mark2

The IntelliVue Support Tool Mark2 helps technical personnel to:

- Carry out configuration, upgrades, and troubleshooting via the network, or on an individual monitor
- Share configuration settings between monitors
- Back up the monitor settings

Care and cleaning

The MX100 deploys chemically-resistant surface materials, designed to resist deterioration from cleaning and disinfection agents. Even against very aggressive disinfectants, the MX100's housing materials have been tested, and found to resist deterioration about 60 times longer than the housing material used for its predecessor. See the list of tested agents in the monitor's Instructions for Use.

Monitor specifications

For measurement extensions, see the respective technical data sheets.

Safety specifications

The monitor complies, among other standards, with:

- IEC/EN 60601-1
- ANSI/AAMI ES60601-1
- CAN/CSA-C22.2 No. 60601-1:14
- IEC/EN 60601-1-2
- IEC/EN 60601-1-6
- IEC/EN 60601-1-8
- IEC/EN 60601-2-49

All applied parts are Type CF unless otherwise specified. They are protected against damage from defibrillation and electrosurgery.

The possibility of hazards arising from software errors was minimized in compliance with:

- ISO/EN ISO 14971
- ANSI/AAMI ISO 14971
- IEC/EN 62304

This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme à la norme NMB-001 du Canada.

The monitor fulfills the following additional mechanical requirements:

- Shock Tests according to IEC TR 60721-4-7, Class 7M3. Test procedure according to IEC/EN 60068-2-27.
- Random Vibration according to IEC TR 60721-4-7, Class 7M3. Test procedure according to IEC/EN 60068-2-64.
- Sinusoidal Vibration according to IEC TR 60721-4-7, Class 7M3. Test procedure according to IEC/EN 60068-2-6.
- Bump Test according to IEC/EN 60068-2-27 (peak acceleration 15 g, 1000 bumps).
- Free Fall Test covers IEC TR 60721-4-7 and Class 7M3. Test procedure according to EN 60068-2-32.

Out-of-hospital safety specifications

The devices designed for out-of-hospital transport can be used in a transport environment such as a road ambulance (not including helicopters and aircrafts).[1] For this purpose, the monitor fulfills the following additional mechanical, EMC, and environmental requirements.

- **IEC 60601-1-12** - General requirements for basic safety and essential performance - Collateral Standard: Requirements for medical electrical equipment and medical electrical systems intended for use in the emergency medical services (limited to ground transport)
- **EN 1789** - Medical vehicles and their equipment (road ambulances)
- **Shock Tests** in accordance with IEC 60068-2-27, represents Class 7M3 as described in IEC TR 60721-4-7, Type 1
- **Bump Test** according to IEC 60068-2-29 – 15g / 6 ms, 1000

1. Only with option E60. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

bumps vertical

- **Random Vibration** in accordance with IEC 60068-2-64, represents Class 7M3 as described in IEC TR 60721-4-7
- **Sinusoidal Vibration** according to IEC 60068-2-6, as described in EN1789
- **Free Fall Test** in accordance with IEC 60068-2-31, represents Class 7M3 as described in IEC TR 60721-4-7. X3 (867030) / MX100 (867033) drop height 1 m

4.1.

- **Free Fall Test** in accordance with EN 60068-2-32, procedure 1 for X3 / MX100 in combination with Microstream Extension 867041. X3 (867030) / MX100 (867033) in combination with Microstream Extension 867041 drop height 0.75 m when connected with locking pins.

  Note: The 867043 IntelliVue Dock is excluded from this requirement, as it is a permanently installed device according to IEC 60601-1.

- **Degrees of protection provided by enclosures (IP Testing)**

4.2.

  - IP33 (system)
  - IP44 (standalone)

The IP44 rating is only valid for the MX100 with option #E60[1] as a standalone device, without any connected patient cables or accessories.

The system IP classification (MX100 with option #E60[1] plus connected accessories) is IP33, in accordance with the out-of-hospital standard IEC 60601-1-12.

The system ingress protection classification is determined by the lowest ingress protection specification of the accessories connected to the MX100 with option #E60[1].

- **Radiated susceptibility** - 20 V/m according to IEC 80601-2-30 (NBP), ISO 80601-2-55 (CO_2), ISO 80601-2-56 (TEMP), ISO 80601-2-61 (SpO_2)
- **EMC Tests** according to IEC 60601-1-2 for EMS Environment CISPR11

Additional EMC Tests in accordance with MIL STD 461G, sections RE101 and CS114 (curve #3).

Note: There may be additional requirements for transport situations in difficult terrain in certain countries, for example, in the EU.

Physical specifications

Product	Max. weight	WxHxD
IntelliVue MX100	1.4 kg (3.1 lb) (incl. options)	249 x 97 x 111 mm (9.8 x 3.8 x 4.4 in)

Environmental specifications

Item	Condition	Range
Temperature range	Operating	0–40°C (32–104°F) or, 0–35°C (32–95°F) - when charging the battery, or - when using a Smart-hopping Interface or WLAN
	Storage	-20–60°C (-4–140°F)
Humidity range	Operating	15–95% RH non-condensing
	Storage	5–90% RH non-condensing
Altitude range	Operating	-500–3000 m (-1640–9842 ft)
	Storage	-500–4600 m (-1640–15091 ft)
Ingress protection	Monitor	• IP32 when in the horizontal position • IP44 in combination with option #E60[2] if used as a standalone device and when in the horizontal position • IP33 in combination with option #E60[2] if used in a system and when in the horizontal position
	External Power Supply (M8023A[a], or 867043)	• M8023A: - IP31 when rested on its rubber feet on a flat, level surface. - IP32 when mounted with the connectors facing downwards. • 867043: IP32

a. Not available in all countries, check with your local Philips representative for further details

1. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

2. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

Performance specifications

MX100 Patient Monitor

Power

Power consumption	• <12 W average • <20 W when on IntelliVue Dock
Operating voltage	36–60 V dc floating
Current	1.3–0.7 A
Frequency	50/60 Hz

Display

Active matrix color LCD display with capacitive multi-touchscreen

Sweep speeds	6.25, 12.5, 25, and 50 mm/s
Resolution	1024 x 480
Useful screen	140 x 65 mm (5.5 x 2.6 in)
Pixel pitch	0.14 x 0.14

Indicators

Alarms off	Red or yellow LED with crossed out alarms symbol
Alarms	Red/yellow/light blue (cyan) LED
On/Standby/Error	Green/red LED integrated in power switch
External power	Green LED
Battery	Green (full), yellow (charging), red blinking (empty) LED

Sounds

- Audible feedback for user input
- Prompt tone
- QRS tone, or SpO_2 modulation tone
- Four different alarm sounds

Display Wave Speeds

Available for standard waves	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s with ±5% accuracy (guaranteed only for integrated displays)

6.3.

Trends

Resolution	12 or 16 numerics @ 12 seconds, 1 minute, 5 minute resolution
Information	Multiple choices of number of numerics, resolution, and duration depending on trend option and application area

Alarm signal

System delay	<4 seconds. The system alarm delay is the processing time the system requires for any alarm to be indicated on the monitor, after the measurement has triggered the alarm
Delay for alarm availability on the network	<5 seconds This is the time required after an alarm indication on the monitor, until the alarm signal is available on the network, to the Patient Information Center, or for transmission to other systems
Pause duration	1, 2, 3 minutes or infinite, depending on configuration
Extended alarm pause	5 or 10 minutes
Sound pressure range	Minimum 0 dB(A) Maximum 45–85 dB(A)

Review Alarms

Information	All alarms/INOPs, main alarms on/off, alarm acknowledge, and time of occurrence
Capacity	300 items

Real-Time Clock

Range	From: January 1, 1997, 00:00 to: December 31, 2080, 23:59
Accuracy	Better than 4 seconds per day
Hold Time when switched off	• If powered by AC: Infinite • With battery: Time is stored but a hold time is not specified, as storing a battery in an unused device for a longer period of time is not recommended • Without power or battery: At least 48 hours

Buffered memory

Contents	Active settings, trends, patient data, real-time reports, events, review alarms
Hold Time when switched off	• If powered by AC: Infinite • With battery: Memory is buffered but a hold time is not specified, as storing a battery in an unused device for a longer period of time is not recommended • Without power: At least 4 hours

Internal battery (453564526811)

The battery is required for the operation of the monitor. The battery lifetime is 3 years from manufacturing date or 500 charge/discharge cycles.

Operating time (with a new, fully charged battery at 25°C)	Basic Mode 1: >5 hours 3.2. • ECG/Resp • Philips FAST SpO_2 • NBP every 15 minutes • Brightness (auto mode off) set to optimum (4) Extended Mode 2: >3 hours. • ECG/Resp • Philips FAST SpO_2 • Dual Pressure • Temperature • NBP every 15 minutes • CO_2 • Wireless radio • Brightness (auto mode off) set to optimum (4)
Charge time	• When monitor is off: 3 hours approx • When monitor is in use and connected to an IntelliVue Dock, without measurement extensions: 2.5 hours approx 3.3. • When monitor is in use and connected to the external power supply (M8023A[a]) without measurement extensions: 4 hours approx

a. Not available in all countries, check with your local Philips representative for further details

Restart time

	After a power interruption, an ECG wave is shown on the display after a maximum of 30 seconds

External Power Supply M8023A[1] performance specifications

Power

Power consumption	• <12 W average • <30 W peak
Line voltage	100–240 V ~
Current	1.3–0.7 A
Frequency	50/60 Hz ~

Indicators

AC power	Green LED

Interface specifications

MX100 Patient Monitor

Measurement Link (MSL)

Connectors	Female MSL (proprietary)
Power	36–60 V input
Power sync	Unused
LAN signals	IEEE 802.3 10Base-T compliant
Serial signals	RS-422 compliant
Local signals	Provided for connecting measurement extensions
Local voltage	9–12.3 V - provided to power the measurement extensions: 867039, 867040, and 867041

Smart-Hopping IF 1.4/2.4 GHz[2]

Type	Internal WMTS/ISM adapter
Technology	Compatible with Philips Cellular Telemetry System (CTS), cellular infrastructure

1. Not available in all countries, check with your local Philips representative for further details

2. The Smart-hopping interface options are not available in all countries; check with your local Philips representative for further details.

Smart-Hopping IF 1.4/2.4 GHz[2]

Frequency band	• WMTS: 1395–1400 MHz and 1427–1432 MHz • ISM: 2400–2483 MHz
Modulation technique	GFSK
Effective Isotropically Radiated Power (EIRP)	Below 22 dBm (164 mW)

12. **802.11 Wireless IF (Wireless Network Adapter)**

Type	Internal wireless adapter
Technology	IEEE 802.11a/b/g/n
Frequency band	2.4 GHz and 5 GHz ISM
USA	• 2.400–2.483 GHz • 5.15–5.35 GHz • 5.72–5.825 GHz
Europe	• 2.400–2.483 GHz • 5.15–5.35 GHz • 5.470–5.725 GHz
Japan	• 2.400–2.483 GHz • 5.15–5.25 GHz • 5.25–5.35 GHz • 5.470–5.725 GHz
China	• 2.400–2.483 GHz • 5.725–5.85 GHz
Modulation technique 802.11b/g/n	• DSSS (CCK, DQPSK, DBPSK) • OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Modulation technique 802.11a/n	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Bandwidth	20 MHz (nominal)
Effective Isotropically Radiated Power (EIRP)	Below 20 dBm (100 mW)

M8023A External Power Supply[1] interface specifications

Measurement Link (MSL)

Connectors	Male MSL (proprietary)
Power	48 V output

1.Not available in all countries, check with your local Philips representative for further details

Measurement Link (MSL)

Power sync.	RS-422 compliant output 78.125 kHz (typical)
LAN signals	IEEE 802.3 10Base-T compliant

Battery specifications

453564526811 Battery

Physical specifications

WxHxD	69.6 x 72.3 x 21.6 mm (2.7 x 2.8 x 0.8 in)
Weight	0.2 kg (0.4 lb)

Performance specifications

Nominal voltage	10.8 V
Rated capacity at discharge C/5	2000 mAh (typically)
Continuous discharge capability	4 A

Environmental specifications

Temperature range	• Discharge 0–65°C (32–149°F) • Charge 0–60°C (32–140°F) • Storage and Transport: -20–60°C (-4–140°F)
Humidity range	• Operating: 15–95% Relative Humidity (RH) • Storage and Transport: 5–95% Relative Humidity (RH)
Battery type	Lithium-ion, 10.8 V, 2000 mAh
Safety	Complies with IEC 62133-2
Electromagnetic compatibility	Complies with the requirements for FCC Type B computing device, and EN 61000-4-2, and EN 61000-4-3
Communication standard	Complies with the SMBus specification v1.1

Measurement specifications

ECG/Arrhythmia/ST/QT

Complies with:

- IEC 60601-2-25
- ANSI/AAMI/IEC 60601-2-25
- IEC 60601-2-27
- ANSI/AAMI/IEC 60601-2-27

ECG/Arrhythmia/ST performance specifications

Cardiotach

Range	• Adult/pedi: 15–300 bpm • Neo: 15–350 bpm
Accuracy	±1% of range
Resolution	1 bpm
Sensitivity	≥200 μV_{peak}

PVC rate

Range	0–300 bpm
Resolution	1 bpm

ST numeric

Range	-20–20 mm
Accuracy	±0.5 mm or 15% whichever is greater
Resolution	0.1 mm

QT numeric

Range	200–800 ms
Accuracy	±30 ms
Resolution	8 ms

QTc numeric

Range	200–800 ms
Resolution	1 ms

ΔQTc numeric

Range	-600–600 ms
Resolution	1 ms

QT-HR numeric

Range - Adult	15–150 bpm
Range - Pedi/neo	15–180 bpm
Resolution	1 bpm

Sinus and SV rhythm ranges

Brady	• Adult: 15–59 bpm • Pedi: 15–79 bpm • Neo: 15–89 bpm
Normal	• Adult: 60–100 bpm • Pedi: 80–160 bpm • Neo: 90–180 bpm
Tachy	• Adult: >100 bpm • Pedi: >160 bpm • Neo: >180 bpm

Bandwidth

Diagnostic mode	Adult/neo/pedi: 0.05–150 Hz
Extended monitoring mode	Neo/pedi: 0.5–150 Hz
Monitoring mode	• Adult: 0.5–40 Hz • Neo/pedi: 0.5–55 Hz
Filter mode	Adult/neo/pedi: 0.5–20 Hz

Bandwidth - when ECG is transmitted from a telemetry device via a short-range radio

Diagnostic mode	Adult/neo/pedi: 0.05–40 Hz
Extended monitoring mode	Adult/neo/pedi: 0.5–40 Hz
Monitoring mode	• Adult: 0.5–40 Hz • Neo/pedi: 0.5–40 Hz
Filter mode	Adult/neo/pedi: 0.5–20 Hz

Differential input impedance

- >2 MΩ RA-LL leads (Resp)
- >5 MΩ at all other leads (at 10 Hz including patient cable)

Common mode rejection ratio

- Diagnostic Mode: >86 dB (with a 51 kΩ/47 nF imbalance)
- Filter Mode: >106 dB (with a 51 kΩ/47 nF imbalance)

Electrode offset potential tolerance

±500 mV

Auxiliary current (leads off detection)

- Active electrode: <100 nA
- Reference electrode: <900 nA

Input signal range

±5 mV

ECG/Arrhythmia/ST supplemental information as required by IEC 60601-2-27

Respiration excitation waveform

Sinusoidal signal, <260 µA @ 40.5 kHz

Noise suppression

RL drive gain 44 dB maximum, maximum voltage 1.8 Vrms

Time to alarm for tachycardia

Vent tachycardia 1 mV_{pp}, 206 bpm	• Gain 0.5: 5.4 seconds + 4 seconds • Gain 1.0: 3.9 seconds + 4 seconds • Gain 2.0: 3.7 seconds + 4 seconds
Vent tachycardia 2 mV_{pp}, 195 bpm	• Gain 0.5: 3.2 seconds + 4 seconds • Gain 1.0: 3.5 seconds + 4 seconds • Gain 2.0: 3.1 seconds + 4 seconds

Tall T-wave rejection capability

1.8 mV T-Wave amplitude according to IEC 60601-2-27, clause 201.12.1.101.17

Heart rate averaging method

Three different methods are used:

- Normally, heart rate is computed by averaging the 12 most recent RR intervals
- For runs of PVCs, up to eight RR intervals are averaged to compute the HR
- If each of three consecutive RR intervals is >1200 ms (that is, rate <50 bpm), then the four most recent RR intervals are averaged to compute the HR

Response time of heart rate meter to change in heart rate

HR change from 80–120 bpm:	• Range: 6.4–7.2 seconds • Average: 6.8 seconds
HR change from 80–40 bpm:	• Range: 5.6–6.4 seconds • Average: 6.0 seconds

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 E (according to IEC 60601-2-25, clause 201.12.4.107.1.1.1) were used to establish overall system error and frequency response

Pacemaker pulse rejection performance

Rejection of pacemaker pulses with amplitudes from ±2 mV to ±700 mV and widths from 0.1 ms to 2.0 ms (Method B)

Pacemaker pulse rejection of fast ECG signals

2.2 V/s RTI (Paced Mode)

Minimum input slew rate

2.2 V/s RTI

ECG/Arrhythmia/ST alarm specifications

HR

Range	15–300 bpm maximum delay: 10 seconds according to IEC 60601-2-27
Adjustment	Adult: • 1 bpm steps (15–40 bpm) • 5 bpm steps (40–300 bpm) Pedi/neo: • 1 bpm steps (15–50 bpm) • 5 bpm steps (50–300 bpm)

Extreme Tachy

Range	• Difference to high limit 0–50 bpm • Clamping at 150–300 bpm

Extreme Tachy

Adjustment	• 5 bpm steps

Extreme Brady

Range	• Difference to low limit 0–50 bpm • Clamping at 15–100 bpm
Adjustment	• 5 bpm steps

Run PVCs

Range	None, fixed setting of 2 PVCs
Adjustment	Not adjustable by user

PVCs Rate

Range	1–99 PVCs/minute
Adjustment	1 PVC

Vent Tach HR

Range	20–300 bpm
Adjustment	5 bpm

Vent Tach Run

Range	3–99 PVCs/minute
Adjustment	1 PVC

Vent Rhythm Run

Range	3–99 PVCs/minute
Adjustment	1 PVC

SVT HR

Range	120–300 bpm
Adjustment	5 bpm

SVT Run

Range	3–99 SV beats
Adjustment	1 SV beat

ST High

Range	-19.8–20 mm
Adjustment	0.2 mm

ST Low

Range	-20–19.8 mm
Adjustment	0.2 mm

QTc High

Range	200–800 ms
Adjustment	10 ms steps

ΔQTc High

Range	30–200 ms
Adjustment	10 ms steps

Respiration

Respiration performance specifications

Respiration rate

Range	• Adult/pedi: 0–120 rpm • Neo: 0–170 rpm
Accuracy	• At 0–120 rpm ±1 rpm • At 120–170 rpm ±2 rpm
Resolution	1 rpm

Bandwidth

0.3–2.5 Hz (-6 dB)

Noise

<25 mΩ (rms) referred to the input

Respiration alarm specifications

High

Range	• Adult/pedi: 10–100 rpm • Neo: 30–150 rpm
Adjustment	• <20 rpm: 1 rpm steps • ≥20 rpm: 5 rpm steps
Delay	Maximum 14 seconds

Low

Range	• Adult/pedi: 0–95 rpm • Neo: 0–145 rpm
Adjustment	• <20 rpm: 1 rpm steps • ≥20 rpm: 5 rpm steps
Delay	• For limits from 0 to 20 rpm: maximum 4 seconds • For limits above 20 rpm: maximum 14 seconds

Apnea Alarm

Range	10–40 seconds
Adjustment	5 second steps

Philips FAST SpO_2 (867030 SP1)

Complies with:

- ISO 80601-2-61
- EN ISO 80601-2-61

Measurement validation

The Philips FAST SpO_2 accuracy has been validated in human studies against arterial blood sample reference measured with a CO-oximeter. Pulse oximeter measurements are statistically distributed, only about two-thirds of the measurements can be expected to fall within the specified accuracy compared to CO-oximeter measurements.

The specified accuracy is the root-mean-square (RMS) difference between the measured values and the reference values.

Philips FAST SpO_2 performance specifications

Range and resolution

Range	0–100%
Resolution	1%

Perf

Range	0.02–30.0
Resolution	0.1, 0.01 for small values

With Philips Reusable Sensors

Accuracy 2% (70–100%)	• M1191B • M1191BL • M1192A

With Philips Reusable Sensors

Accuracy 3% (70–100%)	• M1193A • M1194A • M1195A • M1196A/S

With Philips Reusable Sensors with M1943A(L) Adapter Cable

Accuracy 3% (70–100%)	• M1191T • M1192T • M1193T (Adult) • M1196T
Accuracy 4% (70–100%)	• M1193T (Neonate)

With Philips Disposable Sensors with M1943A(L) Adapter Cable

Accuracy 2% (70–100%)	• M1132A • M1133A • M1134A (Adult/infant)
Accuracy 3% (70–100%)	• M1131A • M1133A • M1134A (Neonate)

With Nellcor Sensors with M1943A(L) Adapter Cable

Accuracy 3% (70–100%)	• MAX-A • MAX-AL • MAX-P • MAX-I • MAX-N • D-25 • D-20 • I-20 • N-25 • OxiCliq[a] A, P, I, N

a. requires additional Nellcor OC3 adapter cable

With Masimo Reusable Sensors with LNC MP10 Adapter Cable

Accuracy 2% (70–100%)	• LNCS DCI • LNCS DCIP • LNCS YI (Adult/pedi/infant)
Accuracy 3% (70–100%)	• LNCS YI (Neonate)
Accuracy 3.5% (70–100%)	• LNCS TC-I

With Masimo Disposable Sensors with LNC MP10 Adapter Cable

Accuracy 2% (70–100%)	• LNCS Adtx • LNCS Adtx-3 • LNCS Pdtx • LNCS Pdtx-3 • LNCS Inf • LNCS Inf-3 • LNCS Neo (Adult) • LNCS Neo-3 (Adult)
Accuracy 3% (70–100%)	• LNCS Neo (Neonate) • LNCS Neo-3 (Neonate) • LNCS NeoPt • LNCS NeoPt-3

Pulse

Range	30–300 bpm
Accuracy	±2% or 1 bpm, whichever is greater
Resolution	1 bpm

Sensors

Wavelength range	500–1000 nm
Emitted light energy	≤15 mW

Numeric update rate

Typical	1 second
Maximum	30 seconds Maximum with noninvasive blood pressure INOP suppression on: 60 seconds

Pulse oximeter calibration range

70–100%

Nellcor OxiMax SpO_2 (867030 SP6)

Complies with:

- ISO 80601-2-61
- EN ISO 80601-2-61

Measurement validation

The Nellcor OxiMax SpO_2 accuracy has been validated in human studies against arterial blood sample reference measured with a CO-oximeter. Pulse oximeter measurements are statistically distributed, only about two-thirds of the measurements can be expected to fall within the specified accuracy compared to CO-oximeter measurements.

The specified accuracy is the root-mean-square (RMS) difference between the measured values and the reference values.

Pulse oximetry performance specifications

SpO_2

Measurement range	1–100%
Resolution	1%
Accuracy	See the Pulse Oximetry Accuracy Table
Low perfusion accuracy [a]	2% (70–100%)

Perf

Range	0.0–25.5
Resolution	0.1

Pulse

Range	25–300 bpm
Resolution	1 bpm
Accuracy	±3 bpm (20–250 bpm)
Low perfusion accuracy [a]	±3 bpm (20–250 bpm)

Sensors - with M1943NL Adapter Cable

Wavelength range[b]	500–1000 nm
Emitted light energy	≤15 mW

Numeric update rate

Typical	1 second
Maximum	≤60 seconds

a. Specification applies to the performance of the device. Reading accuracy in the presence of low perfusion (detected IR pulse modulation amplitude 0.03–1.5%) was validated using signals supplied by a patient simulator. SpO_2 and pulse rate values were varied across the monitoring range over a range of weak signal conditions and compared to the known true saturation and pulse rate of the input signals.

b. Information about the wavelength range can be especially useful to clinicians (for instance, when photodynamic therapy is performed).

Pulse oximetry accuracy table

	SaO_2 range: 70–100%		SaO_2 range: 60–80%
Sensor	**Adult/Infant**	**Neonate**	**Adult**
MAX-A, MAX-AL	2%	n/a	3%
MAX-N	2%	2%	3%
MAX-P	2%	n/a	3%
MAX-I	2%	n/a	3%
MAX-FAST	2%	n/a	3%
MAX-R[a]	3.5%	n/a	n/a
SC-A	2%	n/a	n/a
SC-PR[b]	n/a	2%	n/a
SC-NEO[b]	n/a	2%	n/a
OxiCliq A	2.5%	n/a	n/a
OxiCliq P	2.5%	n/a	n/a
OxiCliq N[c]	2.5%	3.5%	n/a
OxiCliq I	2.5%	n/a	n/a
D-YS[c]	3%	4%	n/a
D-YS & D-YSE	3.5%	n/a	n/a
D-YSPD	3.5%	n/a	n/a
DS100A	3%	n/a	n/a
OXI-A/N[c]	3%	4%	n/a
OXI-P/I	3%	n/a	n/a

a. The accuracy specification has been determined between saturations of 80–100%.

b. SoftCare SC-PR-I, SC-NEO-I: Clinical functionality has been demonstrated on a population of hospitalized neonate and infant patients. The observed SpO_2 accuracy was 3.0% in a study of 57 patients with ages of 24 to 40 weeks, weight from 710–5000 grams, and 185 observations made spanning a range of 63–100% SaO_2 while monitored with Nellcor OxiMax N-595 pulse oximeters.

c. Neonatal accuracy: When sensors are used on neonatal subjects as recommended, the specified accuracy range is increased by ±1 digit, as compared to adult usage, to account for the theoretical effect on oximeter measurements of fetal hemoglobin in neonatal blood. For example, OxiCliq N accuracy on neonates is ±3.5 digits, rather than ±2.5.

Alarm specifications for Philips FAST SpO_2 and Nellcor OxiMax SpO_2

SpO_2

Range	• Adult: 50–100% • Pedi/neo: 30–100%
Adjustment	1% steps
Delay	0–30 seconds (0, 1, 2, 3,... 30) + 4 seconds

Desat

Range	• Adult: 50% to low alarm limit • Pedi/neo: 30% to low alarm limit
Adjustment	1% steps
Delay	0–30 seconds (0, 1, 2, 3,... 30) + 4 seconds

Pulse

Range	30–300 bpm
Adjustment	Adult: • 1 bpm steps (30–40 bpm) • 5 bpm steps (40–300 bpm) Pedi/neo: • 1 bpm steps (30–50 bpm) • 5 bpm steps (50–300 bpm)
Delay	Maximum 14 seconds

Tachycardia

Range	• Difference to high limit: 0–50 bpm • Clamping at 150–300 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

Bradycardia

Range	• Difference to low limit: 0–50 bpm • Clamping at 30–100 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

Masimo rainbow SET SpO_2 (867030 SP5)

Complies with:

- ISO 80601-2-61
- EN ISO 80601-2-61

General performance specifications SpO_2

Numeric update rate for SpO_2, Pulse Rate, and Perf	• Typical: 1 second • Maximum: 30 seconds
Sensors	• Emitted Light Energy ≤25 mW • Wavelength Range[a] 500–1400 nm

a. Information about wavelength range can be especially useful to clinicians (for instance when photodynamic therapy is performed)

Indications for use

The Masimo rainbow SET measurement is indicated for the noninvasive monitoring of functional oxygen saturation of arterial hemoglobin (SpO_2), pulse rate, carboxyhemoglobin saturation (SpCO), methemoglobin saturation (SpMet), total hemoglobin concentration (SpHb), and/or rainbow Acoustic Respiratory Rate (RRac). The Masimo rainbow SET measurement is indicated for use with adult, pediatric, and neonatal patients during both no motion and motion conditions, and for patients who are well or poorly perfused.

Operating conditions

In addition to the general specifications for operating conditions for the MX100 portable patient monitor, the following additional environmental limitations apply for the Masimo rainbow SET measurement:

Environmental limitations

Incandescent Light Intensity	≤100 klx
Fluorescent Light Intensity	≤10 klx
Fluorescent Light Frequency	• 50 Hz or 60 Hz ±1.0 Hz (LNCS sensors) • 50 Hz or 60 Hz ±0.5 Hz (rainbow sensors)
Ambient Noise Level (Sound Pressure Level) (applies to acoustic respiration measurement only)	≤65 dB, alarm tolerant

Measurement accuracy

The following accuracy specifications represent only the device's portion of the integrated Masimo rainbow SET technology performance. The actual measurement performance and accuracy depends on the accessory used and can be limited by the accessory as specified in the sensor's Directions For Use.

Ensure you only use accessories that are specified and provide accuracy specifications applicable for your device.

Measurement	Accuracy
SpO_2, No motion	• 60–80 ±3%, Adult/pedi/infant • 70–100 ±2%, Adult/pedi/infant, ±3% Neo
SpO_2, motion	70–100 ±3%, Adult/pedi/infant/neo
SpO_2, low perfusion	70–100 ±2%, Adult/pedi/infant/neo
Pulse Rate, no motion	25–240 ±3 bpm, Adult/pedi/infant/neo
Pulse Rate, motion	25–240 ±5 bpm, Adult/pedi/infant/neo
Pulse Rate, low perfusion	25–240 ±3 bpm, Adult/pedi/infant/neo
SpCO	1–40 ±3%, Adults/pedi/infant
SpMet	1–15 ±1%, Adult/pedi/infant/neo
SpHb	8–17 ±1 g/dl (arterial or venous), Adult/pedi
RRac	4–70 ±1 breath per minute, Adult/pedi (>10 kg)

Measurement range and resolution

SpO_2

Range	0–100%
Resolution	1%

Perf

Range	• 0.02–20 for disposable sensors • 0.05–20 for reusable sensors
Resolution	0.01

PVI

Range	0–100%
Resolution	1%

Pulse

Range	25–240 bpm
Resolution	1 bpm

SpCO

Range	0–100%
Resolution	1%

SpMet

Range	0–100%
Resolution	0.1%

SpHb

Range	0–25 g/dl (0-15.5 mmol/l)
Resolution	0.1 g/dl (0.1 mmol/l)

SpOC

Range	0–35 ml/dl
Resolution	1 ml/dl

RRac

Range	4–70 rpm
Resolution	1 rpm

Alarm specifications

SpO_2

Range	• Adult: 50–100% • Pedi/neo: 30–100%
Adjustment	1% steps
Delay	0–30 seconds (0, 1, 2, 3,... 30) + 4 seconds

Desat

Range	• Adult: 50–99% • Pedi/neo: 30–99%
Adjustment	1% steps
Delay	0–30 seconds (0, 1, 2, 3,... 30) + 4 seconds

SpMet

Range	Adult/pedi/neo: 0–100%
Adjustment	• 0.1% steps (0–9.9%) • 1% steps (10–100%)
Delay	Maximum 4 seconds

SpCO

Range	Adult/pedi/neo: 0–100%
Adjustment	1%
Delay	Maximum 4 seconds

SpHb

Range	Adult/pedi/neo: 0–25 g/dl (0–15.5 mmol/l)
Adjustment	• 0.1 g/dl steps (0–9.9 g/dl) 0.1 mmol/l (0–9.9 mmol/l) • 0.5 g/dl steps (10–25 g/dl) 0.5 mmol/l (10–15.5 mmol/l)
Delay	Maximum 4 seconds

SpOC

Range	Adult/pedi/neo: 0–35 ml/dl
Adjustment	1 ml/dl steps
Delay	Maximum 4 seconds

Pulse[a]

Range	Adult/pedi/neo: 30–300 bpm
Adjustment	Adult: • 1 bpm steps (30–40 bpm) • 5 bpm steps (40–300 bpm) Pedi/neo: • 1 bpm steps (30–50 bpm) • 5 bpm steps (50–300 bpm)
Delay	Maximum 14 seconds

Tachycardia

Range	• Difference to high limit: 0–50 bpm • Clamping at 150–300 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

Bradycardia

Range	• Difference to low limit: 0–50 bpm • Clamping at 30–100 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

PVI

Range	Adult/pedi/neo: 0–100%
Adjustment	1%
Delay	Maximum 4 seconds

RRac[b]

Range	• Adult/pedi: 0–100 rpm • Neo: 0–150 rpm
Adjustment	• 1 rpm steps below 20 rpm • 5 rpm steps above 20 rpm
Delay	0–60 seconds (0, 10, 15, 30, 60) + 4 seconds

RRac Pause Time

15, 20, 25, 30, 35, 40 seconds

Perf

Range	Adult/pedi/neo: 0.02–20
Adjustment	• 0.01 steps (0.02–0.10) • 0.10 steps (0.10–1) • 1 steps (1–20)
Delay	Maximum 4 seconds

a. The Masimo rainbow SET technology only provides pulse rate values up to 240 bpm. To get pulse rate alarms, set the high alarm limit below 240 bpm.

b. The Masimo rainbow SET technology only provides respiration rate values from 4 rpm to 70 rpm. For respiration rate alarms, set the high alarm limit below 70 rpm and the low alarm limit above 4 rpm.

3D Perf Delta

% Decrease	Adjustment	Duration	Adjustment
10–100%	2%	1 min to 48 hr, infinite	1 min, 5 min, 30 min, 1 hr, 4 hr, 8 hr, 12 hr, 24 hr, 36 hr, 48 hr, infinite

3D Desat Index

Delta Threshold

Range	2–10%
Adjustment	1%

Count

Range	1–25
Adjustment	1 step

Period

Range	1–4 hours
Adjustment	1 hour steps

Noninvasive blood pressure (NBP)

Complies with:

- IEC 80601-2-30
- EN 80601-2-30

NBP performance specifications

Systolic

Range	• Adult: 30–270 mmHg (4–36 kPa) • Pedi: 30–180 mmHg (4–24 kPa) • Neo: 30–130 mmHg (4–17 kPa)

Diastolic

Range	• Adult: 10–245 mmHg (1.5–32 kPa) • Pedi: 10–150 mmHg (1.5–20 kPa) • Neo: 10–100 mmHg (1.5–13 kPa)

Mean

Range	• Adult: 20–255 mmHg (2.5–34 kPa) • Pedi: 20–160 mmHg (2.5–21 kPa) • Neo: 20–120 mmHg (2.5–16 kPa)

Pulse rate

Range	• Adult: 40–300 • Pedi: 40–300 • Neo: 40–300

Accuracy

Max. Std. Deviation	8 mmHg (1.1 kPa)

Accuracy

Max. Mean Error	±5 mmHg (±0.7 kPa)

Pulse rate measurement

Accuracy	• 40–100 bpm: ±5 bpm • 101–200 bpm: ±5% of reading • 201–300 bpm: ±10% of reading (average over NBP measurement cycle)

Measurement time

Typical at HR >60 bpm

Auto/Manual	• Adult: 30 seconds • Neo: 25 seconds • Stat: 20 seconds
Maximum time	• Adult/pedi: 180 seconds • Neo: 90 seconds

Cuff inflation time

Typical for normal adult cuff	<10 seconds
Typical for neonatal cuff	<2 seconds

Initial cuff inflation pressure

- Adult: 165 ±15 mmHg
- Pedi: 130 ±15 mmHg
- Neo: 100 ±15 mmHg

Maximum cuff pressure

- Adult/pedi: 300 mmHg
- Neo: 150 mmHg

Auto mode repetition times

1, 2, 2.5, 3, 5, 10, 15, 20, 30, 45 minutes, or 1, 2, 4, 8, 12, 24 hours

STAT mode cycle time

5 minutes

Venipuncture mode inflation

Inflation pressure	• Adult: 20–120 mmHg (3–16 kPa) • Pedi: 20–80 mmHg (3–11 kPa) • Neo: 20–50 mmHg (3–7 kPa)
Automatic deflation	• Adult/pedi: after 170 seconds • Neo: after 85 seconds

Measurement validation

Clinical investigation according to ISO 81060-2 with the auscultatory reference method:

- The 5th Korotkoff sound (K5) was used in adult/adolescent subjects and the 4th Korotkoff sound (K4) was used in pediatric subjects to determine the diastolic reference pressures.
- The approximation MAP = (2*DIA + SYS) / 3 was used to calculate reference MAP (mean arterial pressure) values from the systolic and diastolic reference pressures.

Clinical investigation according to ISO 81060-2 with the intra-arterial reference method:

- The radial artery was used for the intra-arterial reference measurement.
- The MAP values displayed by the reference invasive blood pressure monitor were used as MAP reference values.

Blood pressure recordings with any arrhythmias were excluded.

NBP alarm specifications

Systolic

Range	• Adult: 30–270 mmHg (4–36 kPa) • Pedi: 30–180 mmHg (4–24 kPa) • Neo: 30–130 mmHg (4–17 kPa)
Adjustment	• 10–30 mmHg (1.5–4 kPa): 2 mmHg (0.5 kPa) • >30 mmHg (>4 kPa): 5 mmHg (1 kPa)

Diastolic

Range	• Adult: 10–245 mmHg (1.5–32 kPa) • Pedi: 10–150 mmHg (1.5–20 kPa) • Neo: 10–100 mmHg (1.5–13 kPa)
Adjustment	• 10–30 mmHg (1.5–4 kPa): 2 mmHg (0.5 kPa) • >30 mmHg (>4 kPa): 5 mmHg (1 kPa)

Mean

Range	• Adult: 20–255 mmHg (2.5–34 kPa) • Pedi: 20–160 mmHg (2.5–21 kPa) • Neo: 20–120 mmHg (2.5–16 kPa)

Mean

Adjustment	• 10–30 mmHg (1.5–4 kPa): 2 mmHg (0.5 kPa) • >30 mmHg (>4 kPa): 5 mmHg (1 kPa)

NBP overpressure settings (not user adjustable)

Adult	>300 mmHg (40 kPa) >2 seconds
Pedi	>300 mmHg (40 kPa) >2 seconds
Neo	>150 mmHg (20 kPa) >2 seconds

Invasive pressure and pulse

Supports up to two pressure transducers via one connector and one Y-cable.

Complies with:

- IEC 60601-2-34
- EN 60601-2-34

Invasive pressure performance specifications

Measurement range

-40–360 mmHg

Input sensitivity

Sensitivity	5 µV/V/mmHg (37.5 µV/V/kPa)
Adjustment range	±10%

Transducers (compliant with ANSI/AAMI BP22)

Load impedance	200–2000 Ω (resistive)
Output impedance	≤3000 Ω (resistive)

Frequency response

DC to 12 Hz or 40 Hz

Zero adjustment

Range	±200 mmHg (±26 kPa)
Accuracy	±1 mmHg (±0.1 kPa)
Drift	<0.1 mmHg/°C (0.013 kPa/°C)

Gain accuracy

Accuracy	±1%
Drift	<0.05%/°C
Non-linearity and Hysteresis	Error of ≤ 0.4% FS (@CAL 200 mmHg)

Overall accuracy (including transducer)

±4% of reading or ±4 mmHg (±0.5 kPa), whichever is greater

Volume displacement of CPJ840J6

0.1 mm^3/100 mmHg

Pulse rate

Range	25–350 bpm
Accuracy	±1% full range
Resolution	1 bpm

Invasive pressure alarm specifications

Pressure

Range	-40–360 mmHg (-5.0–48 kPa)
Adjustment	• -40–50 mmHg (-5–7 kPa): 2 mmHg (0.5 kPa) • >50 mmHg (>7 kPa): 5 mmHg (1 kPa)
Delay	Maximum 12 seconds

Extreme High

Range	Difference to high limit 0–25 mmHg (0–3.5 kPa)
Adjustment	5 mmHg steps (0.5 kPa)
Range	Clamping at -35–360 mmHg (-4–48 kPa)
Adjustment	5 mmHg steps (1.0 kPa)
Delay	Maximum 12 seconds

Extreme Low

Range	Difference to low limit 0–25 mmHg (0–3.5 kPa)
Adjustment	5 mmHg steps (0.5 kPa)

Extreme Low

Range	Clamping at -40–355 mmHg (-5–47 kPa)
Adjustment	5 mmHg steps (1.0 kPa)
Delay	Maximum 12 seconds

Pulse

Range	25–300 bpm
Adjustment	Adult: • 1 bpm steps (25–40 bpm) • 5 bpm steps (40–300 bpm) Pedi/neo: • 1 bpm steps (25–50 bpm) • 5 bpm steps (50–300 bpm)
Delay	Maximum 14 seconds

Tachycardia

Range	• Difference to high limit 0–50 bpm • Clamping at 150–300 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

Bradycardia

Range	• Difference to low limit 0–50 bpm • Clamping at 25–100 bpm
Adjustment	5 bpm steps
Delay	Maximum 14 seconds

Temperature

Complies with:

- ISO 80601-2-56
- EN ISO 80601-2-56

Temperature performance specifications

Temperature

Range (absolute)	-1–45°C (30–113°F)
Range (differential)	±46°C (±115°F)
Resolution	0.1°C (0.1°F)
Accuracy	±0.1°C (±0.2°F)

Average time constant

<10 seconds

Temperature alarm specifications

Temperature high/low alarms

Range	-1–45°C (30–113°F)
Adjustment	• -1–30°C (30–86°F), 0.5°C (1.0°F) steps • 30–45°C (86–113°F), 0.1°C (0.2°F) steps

CO_2

Complies with:

- ISO 80601-2-55
- EN ISO 80601-2-55

Mainstream CO_2 performance specifications

CO_2

Range	0–150 mmHg (0–20 kPa)
Accuracy	After two minutes warm-up: • For values between 0 and 40 mmHg (0 and 5,3 kPa): ±2.0 mmHg (±0.27 kPa). • For values from 41–70 mmHg (5.4–9.3 kPa): ±5% of reading. • For values from 71–100 mmHg (9.4–13.3 kPa) ±8% of reading. • For values from 101–150 mmHg (13.4–20 kPa): ±10 % of reading the specifications are valid for standard gas mixtures, balance air, fully hydrated at 35°C, Pabs = 760 mmHg (101.3 kPa), flow rate = 2 l/min
Resolution	Numeric: 1.0 mmHg (0.1 kPa)
Stability:	
Short-term drift	±0.8 mmHg (0.11 kPa) over four hours
Long-term drift	Accuracy specification is maintained over a 120-hour period

awRR

Range	2–150 rpm
Accuracy	±1 rpm

Warm-up time

Two minutes with CO_2 transducer attached for full accuracy specification

Rise time

<60 ms (with adult or infant reusable or disposable adapter)

Total system response time

<Rise Time + 1 second

Sidestream CO_2 performance specifications

CO_2

Range	0–150 mmHg (0–20 kPa)
Accuracy	After two minutes warm-up: • For values between 0 and 40 mmHg (0 and 5,3 kPa): ±2.0 mmHg (±0.27 kPa). • For values from 41–70 mmHg (5.4–9.3 kPa): ±5% of reading. • For values from 71–100 mmHg (9.4–13.3 kPa) ±8% of reading. • For values from 101–150 mmHg (13.4–20 kPa): ±10% of reading. At respiration rates above 80 rpm, all ranges are ±12% of reading. The specifications are valid for gas mixtures of CO_2, balance N_2, dry gas at 760 mmHg (101.3 kPa) within specified operating temperature range.
Resolution	Numeric: 1.0 mmHg (0.1 kPa)
Stability:	
Short-term drift	±0.8 mmHg (0.11 kPa) over four hours
Long-term drift	Accuracy specification is maintained over a 120-hour period

awRR

Range	2–150 rpm
Accuracy	±1 rpm

Warm-up time

Two minutes with CO_2 sensor attached for full accuracy specification

Sample flow rate

50 ±10 ml/minute

Gas sampling delay

3 seconds

Total system response time

<gas sampling delay time + (rise time + 1 second)

CO_2 alarm specifications

$etCO_2$ High

Range	20–95 mmHg (2–13 kPa)
Adjustment	1 mmHg (0.1 kPa) steps
Delay	<14 seconds (excluding Total Sytem Response Time)

$etCO_2$ Low

Range	10–90 mmHg (1–12 kPa)
Adjustment	1 mmHg (0.1 kPa) steps
Delay	<14 seconds (excluding Total Sytem Response Time)

$imCO_2$ High

Range	2–20 mmHg (0.3–3 kPa)
Adjustment	1 mmHg (0.1 kPa) steps
Delay	<14 seconds (excluding Total Sytem Response Time)

awRR High

Range	• Adult/pedi: 10–100 rpm • Neo: 30–150 rpm
Adjustment	• <20 rpm: 1 rpm steps • >20 rpm: 5 rpm steps
Delay	<14 seconds (excluding Total System Response Time)

awRR Low	
Range	• Adult/pedi: 0–95 rpm • Neo: 0–145 rpm
Adjustment	• <20 rpm: 1 rpm steps • >20 rpm: 5 rpm steps
Delay	• Settings <20 rpm: <4 seconds • Settings >20 rpm: <14 seconds (excluding Total Sytem Response Time)

Apnea delay	
Range	10–40 seconds
Adjustment	5 second steps
Delay	Set apnea delay time + 4 seconds (excluding Total Sytem Response Time)

Ordering information

Base unit

Philips 867033 including:

- 1 x Lithium-ion Battery
- Carrying Handle
- IntelliVue Dock

Mandatory options

Waves		
3-wave capability	2.4.	A03
4-wave capability		A04
5-wave capability		A05

Measurement options	
ECG, NBP, SpO_2	B20
ECG, NBP, SpO_2, 2 x Press, Temp	B26
ECG, NBP, SpO_2, CO_2[a], 2 x Press, Temp	B27

a. CO_2 only available with Philips FAST SpO_2

SpO_2 technology	
Philips FAST SpO_2	SP1
Masimo rainbow SET SpO_2	SP5
Nellcor OxiMax SpO_2	SP6

Add-on options

Software	Option
Innovation SW Rev. P	R17[a]
Upgrade to SW Rev. P Base	SUP
Documentation for SW Rev. P	DCP

a Option is automatically included in new monitors shipped with P.0. Not available in Canada, the USA, and territories relying on FDA market clearance.

Clinical applications	
Extended ECG Capabilities – Full Arrhythmia Capability - C01 – ST/STE Map - C13 – QT Analysis - C51 – Hexad - C54	CP2
Extended Alarming Capabilities – Alarm Visualization - C44 – Smart Alarm Delay - C45	CP4
Arrhythmia Functionality	CP6[a]
Parameter Histograms	C09
Conventional 12-Lead ECG	C12
Full Networking	C15
Alarm Advisor	C46

a Check availability in your country

XDS functionality	
The XDS Software Option X90 bundles the following XDS functionality: • XDS Connectivity (X00) • XDS Remote Control (X20) • XDS Clinical Workstation (X30) • XDS Database (X40)	X90

Pulse oximetry options	
Masimo rainbow SpHb + SpOC	R01
Masimo rainbow SpCO	R02
Masimo rainbow SpMet	R03
Masimo rainbow PVI	R04

Pulse oximetry options

SpHb + SpOC + PVI, includes: – Masimo rainbow SpHb + SpOC - R01 – Masimo rainbow PVI - R04	R11
SpHb + SpOC + PVI + SpMet + SpCO, includes: – Masimo rainbow SpHb + SpOC - R01 – Masimo rainbow SpCO - R02 – Masimo rainbow SpMet - R03 – Masimo rainbow PVI - R04	R12
Masimo rainbow Acoustic Monitoring	R21

Wireless interfaces

802.11 Wireless IF	J35
Smart-hopping IF 1.4 GHz	J45[a]
Smart-hopping IF 2.4 GHz	J47[a]

a. Not available in all countries, check with your local Philips representative for further details.

Hardware add-ons

Fix Clamp Mount	E20
Bedhanger Mount	E21
Add 1 x Lithium-ion battery	E24
Rotatable Quick Claw Mount	E29
Out-of-hospital	E60[a]
Sync Signal Cable	SN3

a. Not available in all countries. Not available in the USA and territories relying on FDA market clearance.

Sensors and disposables options

Invasive pressure accessories

Dual IBP Adapter - for use with existing Philips-compatible invasive pressure cables	K14
Transpac IV Dual IBP Cable - for use with compatible ICU Medical pressure transducers	K16

Supplies and accessories

For information about supplies and accessories, see the separate “Philips IntelliVue Accessories” technical data sheet.

Related products

M3086A IntelliVue Support Tool Mark2. Available on DVD and via InCenter. For more information, see: http://www.2.forms.healthcare.philips.com/LP=463

Documentation

All documentation is available in .pdf format on a documentation DVD that is shipped with the product. Additionally, a predefined number of printed Instructions for Use ships with each order.

Trademark acknowledgments

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How to reach us:

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