IntelliVue MX550 Patient Monitor

Philips 866066 Technical Data Sheet

The Philips IntelliVue MX550 patient monitor offers a flexible and modular monitoring solution, designed to suit a broad spectrum of needs. The monitors can be connected to the Philips Multi-Measurement Module (MMS) family with its extensions, plug-in measurement modules and the IntelliVue gas analyzers to extend its functionality with plug-and-play convenience. Dedicated configurations are available for the anesthesia, intensive, cardiac, neonatal and general care environments.

Features

- Intuitive user interface.
- Simple menu hierarchy gives fast access to all basic monitoring tasks.

- Screen layouts are easily adjustable, allowing flexible display of measurement information.
- Previous/Next Screen function provides access to the most recently used screens including the last three modified screens.
- Temperature, height, and weight can be configured either 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, and high resolution trends to track changes with beat-to-beat resolution.
- Drug, ventilation, hemodynamic, and oxygenation calculations.
- User or case-specific profiles enable rapid case turnover.

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- Patented automatic alarm limits help clinicians provide care more efficiently.
- Event Surveillance including Neonatal Event Review for automatic detection of patient status deterioration.
- Bed-to-bed overview provides clinicians with an overview of all the patient beds in their care.
- Choice of input devices: Touchscreen, remote control, trackball, mouse, keyboard or barcode reader.
- Capable of functioning in a wireless infrastructure.
- Graphical measurement window shows which measurements are being measured by which device, making it easier to resolve measurement label conflicts.
- Timers application allows you to set timers to notify you when a specific time period has expired.
- The monitor can be configured to automatically adapt the screen brightness to the ambient light conditions. The range within which this adaption is made is determined by the setting made with the brightness SmartKey.
- Integrated carrying handle.

Indicated 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 healthcare professionals in a hospital environment.

The monitor is additionally intended for use in transport situations within hospital environments.

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 EC 11).
ST segment monitoring is intended for use with adult patients only and is not clinically validated for use with neonatal and pediatric patients.
The SSC Sepsis Protocol, in the ProtocolWatch clinical decision support tool, is intended for use with adult patients only.
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) is intended for use with sedated patients receiving controlled mechanical ventilation and mainly free from cardiac arrhythmia. The PPV measurement has been validated only for adult patients.

The transcutaneous gas measurement (tcGas) is restricted to neonatal patients only.
The IntelliVue NMT Module is intended to be used as an objective neuromuscular transmission monitor, using accelerometry for measuring the muscle contraction following an electrical stimulation of a peripheral nerve. The NMT Module is intended to be used with adult and pediatric patients.

Modularity

The monitor's functionality can be extended by connecting Philips plug-in modules, the multi-measurement module (MMS) family with extensions, and gas analyzers with plug-and-play convenience.
The monitors are available as standalone or networked solutions.
The monitors' modular design allows new capabilities to be added in the future as monitoring requirements change. This upgradability gives the security of knowing that the monitor can be enhanced and updated as practices and technologies advance, protecting long-term investments.

Main Components

Display
The monitors have a color 15" LCD TFT display with a wide viewing angle, providing high resolution waveform and data presentation.
The MX550 integrates the display and the processing unit into one device. One external display[1] - providing an adaptive duplicate-image of the primary display - can be connected to a built-in DVI-I port.

User Interface
The color Graphical User Interface is designed for fast and intuitive operation, and ensures that clinicians quickly feel at ease using the monitor.
SmartKeys with intuitive icons allow monitoring tasks to be performed quickly and easily, directly on the monitor screen.
Waves and numerics are color-coded.
The MX550 displays up to six 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 optimal use of the available display space, for example, waves can be overlapped or wave size can adjust dynamically depending on the number of waves configured for the space.
The Basic Help provides on-screen operating help, explaining INOP and alarm messages.

[1] Requires Option J15 - Adaptive Secondary Display.

Touchscreen Operation

The MX550 monitor is supplied as standard with a touchscreen display with a resistive surface.

Remote Control

The IntelliVue Remote Control 865244 provides direct access to five hardkeys, a navigation knob and a numeric keypad which can also be used for alphanumeric entry. The hardkeys include "Silence", "Alarms Off / Pause Alarms", "Back Key", "MainScreen", and a "SmartKeys" key that displays a block of configurable smart keys. The remote control is connected to the MX550 monitor via USB interface or SRR interface (wireless) and used for remote operation of the monitor.

Input Devices

Supported input devices include USB-compatible off-the-shelf computer accessories such as mouse, keyboard, trackball or barcode reader. All input devices can be used individually or in combination.

Mouse

Any specified USB mouse or trackball may be used for data entry.

Computer Keyboard

A computer keyboard can be connected to the monitor via a USB connection and used for data entry.

Keyboard

If alpha or numeric data entry is required, for example to enter patient demographics, a pop-up keyboard will automatically appear on the screen. If desired a USB-compatible off-the-shelf keyboard can be used instead.

Multi-Measurement Module

The M3001A Multi-Measurement Module (MMS) can be connected without cables to the rear of the MX550. The MMS can also be connected to the monitor with cables in order to place it in patient vicinity. It sends measurement waves and numerics to the monitor screen and generates alarms and INOPs. Patient demographic details are stored in the MMS. Eight hours of patient trends can be transferred to the monitor.
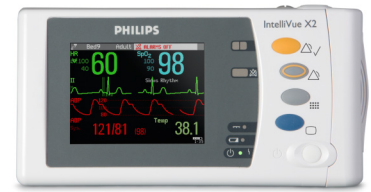
The MMS provides measurement data for Electrocardiogram (ECG)/ Arrhythmia, Respiration, Oxygen Saturation of Arterial Blood (SpO_2), Non-invasive Blood Pressure (NBP), and Invasive Pressure or Temperature. It features 12-lead ECG capability, multi-lead arrhythmia, and 12-lead ST analysis.

X2 Multi-Measurement Module

The M3002A X2 Multi-Measurement Module can be connected without cables to the rear of the MX550. The X2 can also be connected to the monitor with cables in order to place it in patient vicinity. It sends measurement waves and numerics to the monitor screen and generates alarms and INOPs. Up to 24 hours of patient trends are stored in the X2, as well as patient demographic details. Eight hours of patient trends can be transferred to the host monitor.

IntelliVue X2 Multi-Measurement Module

The X2 provides measurement data for Electrocardiogram (ECG)/ Arrhythmia, Respiration, Oxygen Saturation of Arterial Blood (SpO_2), CO_2, Non-Invasive Blood Pressure (NBP), and Invasive Pressure or Temperature. It features diagnostic 12-lead ECG capability, multi-lead arrhythmia, and 12-lead ST analysis. The X2 can also be used as a stand-alone monitor.

MMS Extensions

An MMS Extension can be slotted onto an X2 or Multi-Measurement Module to add:
• an additional Invasive Pressure and Temperature Measurement, a third Invasive Pressure, or Temperature Measurement (one at a time) and optionally a Cardiac Output/Continuous Cardiac Output measurement (M3012A), or
• an additional Invasive Pressure Measurement, a third Invasive Pressure or Temperature Measurement (one at a time), an integrated mainstream or sidestream CO_2 measurement and optionally a Cardiac Output/Continuous Cardiac Output measurement (M3014A), or
• an additional Invasive Pressure or Temperature measurement (one at a time) and a Microstream CO_2[1] measurement (M3015A), or

[1] Microstream is a registered trademark of Oridion Systems Ltd.

• a dual Invasive Pressure and Temperature measurement and a Microstream CO_2 measurement (M3015B).

Integrated Module Slots

The monitors have three integrated module slots for use with the plug-in modules.

Plug-In Modules

Individual plug-in measurement modules are available to measure:
- M1006B Invasive Blood Pressure
- M1011A Intravascular Oxygen Saturation Module (SO_2)
- M1012A Cardiac Output/Continuous Cardiac Output
- M1014A Spirometry
- M1020B SpO_2
- M1027A Electroencephalograph (EEG)
- M1029A Temperature
- 865383 NeuroMuscular Transmission (NMT)

Additional plug-in modules available are:
- M1116B/C Thermal Array Recorder
- 865115 EC10 IntelliBridge

Supported Device Interfaces are:
- IntelliBridge (Module or I/O Board)
- RS-232 Data Export
- G1/G5 device

IntelliVue Gas Analyzers

Versatile IntelliVue G1 andG5 gas analyzers measure the five most commonly used anesthetic gases, as well as N_2O and CO_2. They all provide inspiration and expiration values for display on Philips IntelliVue patient monitors and the values required for MAC calculation in the IntelliVue Patient Monitors. The IntelliVue G1 gas analyzer measures the single agent chosen by the clinician. The IntelliVue G5 features automatic agent identification and mixed-agent measurement capability. Advanced O_2 technology based on paramagnetic measurements is optional with the G1 and included as standard with the G5. The TcG10[1] measures the transcutaneous O_2 and CO_2 partial pressure in neonates, pediatrics and adults.

Mounting

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

Applications for Specific Care Settings

Anesthesia Features

• The **IntelliVue G1** and **G5** measure the five most commonly used anesthetic gases, as well as N_2O and CO_2.

[1] May not be available in all countries

• The **IntelliBridge EC10 Module** provides external device interface capability to external devices at the bedside which have a serial RS-232 and/or LAN output.
• The **EEG** module determines coma prognosis and extent of cerebral insult. **CSA** information can be either permanently displayed on specially designed screens or viewed in a separate window.
• **Screens** provide flexible viewing of patient information during different procedures or phases of an anesthesia case.
• **Respiratory Loops.** The IntelliVue Patient Monitor can generate three types of respiratory loops and display one real-time loop and up to six stored loops simultaneously. This assists in early detection of patient airway problems (for example, atelectasis, bronchospasm) and ventilator problems (for example, leaks and kinked tubes).
• The **Spirometry Module** provides airway pressure, volume and flow measurements to monitor changes in respiratory status.
• The **NMT Module** together with the NMT Patient Cable offers automatic measurements of muscle response to electrical stimuli delivered via electrodes placed over a peripheral nerve, this enables the evaluation of muscle relaxation of patients under Neuromuscular Block. The strength of the muscle response is measured with an acceleration sensor.

Critical and Cardiac Care Features

• The monitor performs multi-lead **arrhythmia detection** analysis on the patient's ECG waveform at the bedside. It analyzes for ventricular arrhythmias, calculates heart rate, and generates alarms, including asystole, bradycardia, and ventricular 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.
• **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.
• SO_2 and $ScvO_2$ measurements provide guidance for the treatment of sepsis treatment protocols.
• The **Parameter Histogram** View of the Vital Signs Trend allows the clinician to see, at a glance, the stability of the patient's condition for a selected time period.
• **ST Map** application shows ST changes over time in two multi-axis spider diagrams.
• **12-lead ECG** data can be measured in diagnostic quality, using either the EASI placement method with five standard electrodes or conventional electrode placement with 10 electrodes.[2]
12 real-time ECG waveforms can be displayed simultaneously on all IntelliVue models.

- High performance pulse oximetry technologies perform accurately even in cases with low perfusion.
- Choice of Microstream, sidestream and mainstream **CO_2 monitoring** for high quality measurements with intubated and non-intubated patients.
- **Continuous cardiac output** and advanced hemodynamic assessment are provided using the PiCCO™ method without a pulmonary catheter.[1]
- **Clinical calculations** enable stored and manually entered data to be used to perform hemodynamic, ventilation and oxygenation calculations. Calculated data is displayed in both indexed and non-indexed format.
- **Spirometry** measurements help to manage ventilator settings and weaning.

Neonatal Monitoring Features

- Transcutaneous gas (**TcGas**) monitoring helps to optimize respiratory therapy in neonates.
- **Dual-Pulse Oximetry** capability allows the clinician to measure pre and post-ductal saturations.
- The Oxygen CardioRespiroGram (**oxyCRG**) screens provide a simultaneous presentation of up to three High-Resolution Trends:
  – beat-to-beat heart rate (btbHR)
  – an oxygenation measurement trend (SpO$_2$ or tcpO$_2$)
  – compressed respiration rate.
- This customized display gives clinicians a convenient overview of the neonatal patient's most important vital signs, helping them to identify significant events.
- Continuous oxyCRG recordings can be made at the bedside on the integrated recorder,and reports can be printed on locally or centrallyconnected printers.
- Dual SpO$_2$ measurement provides clinical support through comparison and trending of the pulse oximetry values from two distinct patient sites.
- Trended values can also be viewed in the form of a histogram. The SpO$_2$ histograms can be trend histograms or real-time histograms with 1-second samples.
- Car Seat Assessment Record (CAR). This is a special period of event surveillance for neonates during a car seat test. During the CAR period, a real-time SpO$_2$ histogram is also generated with 1-second samples.
- Neonatal Event Review (NER), for automatic detection of patient status deterioration. NER is optimized for monitoring neonatal patients. For each event, an episode of four minutes of data sampled

four times a second is stored, to help you keep a record of rapidly-changing condition of neonatal patients. Combi-events correlate apnea events with bradycardia and/or desaturations.

IntelliVue Applications

Advanced Clinical Solutions
Clinicians are continuously drawing mental images from their observations of patients' vital signs. The IntelliVue's clinical decision support applications offer this dynamic "minds eye view" directly on the monitoring screen display.

ProtocolWatch
ProtocolWatch allows clinicians to run clinical protocols that can monitor developments in the patient's condition. The SSC Sepsis Protocol runs on the ProtocolWatch application and is used in screening for severe sepsis and monitoring its treatment.

ST Map
ST Map provides a graphical display that can help clinicians to recognize ST changes and their location in the heart more easily. ST Map collects ST values created from the frontal (limb leads) and horizontal (chest leads) plane into an integrated display. The maps are multi-axis portraits of the patient's ST segments as measured with the ST/AR arrhythmia algorithm.

Advanced Event Surveillance
Events are electronic records of episodes in the patient's condition. They can be used to drive alert notification to assist compliance to any protocol that is being used by the clinician.

Horizon Display
Horizon trends provide clinicians with a graphical visualization tool that allows the end user to detect at a glance the patients' current clinical status. By combining parameters together on the display, the clinician is assisted in their cognitive process of pattern recognition.

Loops
Up to six loops of each type can be stored and compared to detect respiratory changes more easily.

Screen Display Flexibility
Up to 20 different screens can be created per monitor, which means that the clinician has the ability to have a screen created to match a specific clinical scenario on which the data that matters is displayed. This streamlines the information that needs to be processed and interpreted to make the right decision at the right time.

[2] EASI-derived 12-lead ECGs and their measurements are approximations to conventional 12-lead ECGs. As the 12-lead ECG derived with EASI is not exactly identical to the 12-lead conventional ECG obtained from an electrocardiograph, it should not be used for diagnostic purposes.
[1] PiCCO™ is a trademark of Pulsion Medical Systems AG.

Trends

- A choice of four *standard* trend database configurations is provided, designed to suit specific application areas. Patient data from up to 32 measurement numerics can be sampled every 12 seconds, one minute, or five minutes, and stored for a period ranging from four to 48 hours.
- *Tabular Trends* (Vital Signs) show data for up to 32 measurement numerics in tabular form. Tabular Trends can either be viewed in a separate window or permanently displayed on specially designed screens.
  - 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.
- With *Graphic Trends*, up to three rows of measurement trends can be displayed in graphic form, each combining up to three measurements. Graphical Trends can either be viewed in a separate window or permanently displayed on specially designed screens.
- *Screen Trends* permanently display trend data for periodic and aperiodic parameters in graphical format on special screens. The displayed time period can be set to 30 min, 1 h, 2 h or 4 h.
- *High Resolution Trends* allow the user to track fast-changing measurement trends with beat-to-beat resolution (four samples/ second). The number of High Resolution Trends available for display depends on the wave option purchased.
- *Horizon Trends* show the deviation from a stored baseline.
- Trended values can be viewed in the form of a histogram. The SpO_2 histograms can be *Trend Histograms* with 1-second samples.
- Navigation arrows provide easy access to the stored trends. Trend data can be documented on a locally or remotely connected printer.
- With *Event Surveillance*, changes in patients' condition are automatically detected and an electronic record of data called an Episode is stored. The Episode can store:
  - 15 seconds of high-resolution wave trace,
  - four minutes of data sampled four times a second, or
  - 20 minutes of data sampled every 12 seconds.

Event triggers can use the preset alarm limits or they can be user-defined. With user-defined triggers, event episodes are stored even when alarms are paused. A Manual Event SmartKey enables manual episode storage.

Event Annotation allows immediate or retrospective annotation of events using a user-defined list of event markers such as "ventilated". Events can be stored in a database for retrospective review, and episode data including graphic event reviews can be documented on a local or central printer. In addition, episode data without graphic elements can be documented on the integrated recorder[1]. Events are also marked on the Event Line of an Information Center.

The *Basic Event Surveillance* package includes one Event Group plus the OxyCRG Group. Up to 50 event episodes can be stored over a 24 hour-period.

The *Advanced Event Surveillance* package offers increased storage capability, enabling the monitor to store data from up to 100 events over a 48-hour period. Up to six user-defined Event Groups can be configured, each made up of up to four measurements. All six groups can be active at the same time. Advanced user-configurable trigger mechanisms allow the clinician to define event triggers combining information from up to four measurements. Either alarm limits or user-defined thresholds or deviations can be configured as event triggers. The user can set event notifications in order to be notified when an event is detected.

Transport Features

- The monitors' portable design means they can be used for in-hospital transport.
- The monitors can operate using battery[2] power for 2 to 2.5 hours, depending on the monitor configuration, to let you safely and easily monitor patients during procedures or in-hospital transfer.
- The transition from bedside monitoring to transport is smooth and easy, with no need to disconnect patient cables or adjust any measurement or monitor settings.
- The monitor's network capability means that it is ready for use as an integrated part of the hospital system.
- Specially-designed mounting solutions let you quickly disconnect the monitor for transport and reconnect to the mount after transport.

Patient Transfers

- The Universal Admit, Discharge, and Transfer (ADT) feature means that all ADT information is shared between the networked monitor and the Philips IntelliVue Information Center (PIIC/PIIC iX). Information need only be entered once.
- Patients can be transferred by disconnecting the MMS or X2 from a monitor, and then reconnecting it at a new monitor. Patient demographics are stored in the MMS and the X2, so they do not have to be re-entered at the new monitor.

Patient Data Documentation

- An extensive range of *Patient Reports* can be printed:
  - Event Review and Episode Reports
  - 12-lead ECG Reports
  - Vital Signs
  - Graphic Trends
  - Cardiac Output Reports
  - Wedge Procedure Reports
  - Calculations Reports

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[1] Integrated recorder is optional, see: "Hardware Options".

[2] Battery required, see; "Hardware Options".

- EEG Report
- Histogram Reports
- Loops Report
- ST Map Reports
- QT Reports
- Alarm Limit Reports
- Drug Calculator Reports
- Real-time Wave Reports
- Oxy CRG 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 locally or centrally-connected printers, and they can be initiated manually or automatically at user-defined intervals.

Recordings

The M1116B/C plug-in recorder records numerics for all active measurements and up to three wave forms. It can be used for local recording in the Integrated Module slots.

Alarms

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

Alarm limits are permanently visible on the main screen. When an alarm limit is exceeded, it is signalled 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 numeric of the alarming measurement flashes on the screen.
- 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 "SmartAlarm Delay" feature helps to reduce the number of pulse oximetry nuisance alarms.[1]

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

The nurse call relay has active open and closed contacts and a user-definable delay time.

- 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 Audio off/Pause Alarms function (equivalent to Silence/Suspend with previous monitor generations) allows the user to switch off alarm tones with one touch or click while retaining visual alarm messages.

All alarms can be paused indefinitely or for a period of one, two, three, five, or 10 minutes depending on their configuration.

Alarm strip recordings are available on the M1116B/C Recorder Module or on a centrally-connected recorder.

Patented automatic alarm limits automatically adapt 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.

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 neo-natal. 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.

Profiles can be created directly on the monitor or remotely on a personal computer and transferred to the monitor using the Support Tool. A selection of Profiles for common monitoring situations is provided with the monitor.

Networking Capabilities

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

- DHCP protocol support (as an alternative to BootP in certain network designs)
- QoS Tagging
- 802.11 WLAN or Smart Hopping Interface (1.4 or 2.4 GHz)

Other Bed Overview Capability

The alarm status of beds in the same Care Group on the hospital network can be permanently displayed on the screen of each monitor in the Care Group. The user can also view measurement data from all other monitors connected to the hospital network. Other Bed information can either be viewed in a separate window or permanently displayed on specially designed screens.

[1] Not available in the U.S.A. and territories relying on FDA Market clearance. The Smart Alarm Delay functionality is currently not available in China or in clinical environments under SFDA control.

Clinical Calculation Set

The clinical calculation set consists of: Hemodynamic, Oxygenation, and Ventilation calculations.

Hemodynamic Calculations:
- Cardiac Index (C.I.)
- Stroke Volume (SV)
- Stroke Index (SI)
- Systemic Vascular Resistance (SVR)
- Systemic Vascular Resistance Index (SVRI)
- Pulmonary Vascular Resistance (PVR)
- Pulmonary Vascular Resistance Index (PVRI)
- Left Cardiac Work (LCW)
- Left Cardiac Work Index (LCWI)
- Left Ventricular Stroke Work (LVSW)
- Left Ventricular Stroke Work Index (LVSWI)
- Right Cardiac Work (RCW)
- Right Cardiac Work Index (RCWI)
- Right Ventricular Stroke Work (RVSW)
- Right Ventricular Stroke Work Index (RVSWI)
- Extra Vascular Lung Water Index (EVLWI)
- Intrathoracic Blood Volume Index (ITBVI)
- Global End Diastolic Volume Index (GEDVI)

Oxygenation Calculations:
- Arterial Oxygen Content (CaO_2)
- Venous Oxygen Content (CvO_2)
- Arteriovenous Oxygen Content ($CavO_2$)
- Oxygen Availability (DO_2)
- Oxygen Availability Index (DO_2I)
- Oxygen Consumption (VO_2)
- Oxygen Consumption Index (VO_2I)
- Oxygen Extraction Ratio (O_2ER)
- Alveolar-Arterial Oxygen Difference ($AaDO_2$)
- Percent Arteriovenous Shunt (Qs/Qt)

Ventilation Calculations:
- Minute Volume (MINVOL)
- Compliance (COMP)
- Dead Space (Vd)
- Dead Space/Tidal Volume Ratio (Vd/TV)
- Alveolar Ventilation (ALVENT)

Drug Calculator

The drug calculator allows you to calculate the fourth value when three of the following values are entered: dose, amount, volume, rate of infusion.

A titration table and drip table can be displayed and printed.
Measurement units can be converted (for example, lbs to kg).
The drug calculator can also be configured to include a list of commonly used drugs using the support tool.

Service Features

- The Support Tool 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.
  - document configuration settings.
- A password-protected Service Mode ensures that only trained staff can access service tests and tasks.
- The Configuration Mode is password-protected and allows trained users to customize the monitor configuration.

Device Connections

The monitor can be connected to:
- External devices via IntelliBridge EC10 Module/EC10 IF Board.
- Gas Analyzers.
- Information Center (for example, M3150B).

Standard Interface Connections

Adaptive Secondary Display

The Adaptive Secondary Display, (Option J15), activates the DVI video interface. The output of this interface mirrors the content of the monitor display. The output supports VESA display timings, allowing off-the-shelf displays to be used with the DVI output.

Network Interface

The network interface provides the system with networking capability via a wired network connection.

Device Interface (USB Interface)

This interface allows connection of USB devices (Mouse, Keyboard, Barcode Scanner, PCL5-supported Printer) to the monitor.

Further Optional Connection Interfaces

Wireless Infrastructure

- Option J35 enables the monitor to function within a WLAN. The WLAN infrastructure is an IEEE 802.11 a/b/g network in the 2.4 GHz or 5 GHz bands.
- Smart Hopping Interface options, J45 (1.4 GHz [USA only]) and J47 (2.4 GHz) enable communication with a Philips IntelliVue Information Center (PIIC) or a Philips IntelliVue Information Center iX (PIIC iX), using the Philips Cellular Telemetry System (CTS), cellular infrastructure.
- The Short-Range Radio option (J46) provides wireless connectivity to the IntelliVue Remote Control.

Additional components are required to complete the system. Please refer to the IntelliVue Clinical Network documentation for further information.

Advanced System Interface

The Advanced System Interface, option J40, supports an isolated RS-232/5 V interface, a basic Nurse Call connector and two additional USB Connectors.

Device Interface (USB Interface)

Option J25 adds a USB port on the right-hand-side of the monitor.

Flexible Nurse Call Interface

Option J30, the Flexible Nurse Call Interface provides a means for alarms generated on the monitor to be signaled on an external device such as a nurse call system, a beeper or a light. It provides three general alarm relays and one power fail alarm. The external device is connected to the alarm relay and alarms are triggered by criteria defined by the user. It has active open and closed contacts and a user-definable delay time.

MIB/RS-232 (2 port) Interface Board

Additional dual MIB/RS-232 I/O boards (Option J13) can be installed. The MIB ports can be independently configured to be used for:

– input for connection to a touchscreen.
– numeric, wave, and alarm data export using a computer interface, to an automated anesthesia record keeper or a personal computer (not available in all countries).
– connection to a gas analyzer.
– Data Out can be configured up to two times for each monitor. Note that only the first MIB/RS-232 port configured to Data Out (that is, the first one to receive a request) provides wave export. A second MIB/RS-232 port configured to Data Out only exports numerics.

IntelliBridge EC10 IF Board

Option J32, the IntelliBridge external device connection implements the physical layer of the ISO/ IEEE 11073-30200 standard.
Driver software is available to support connectivity with a wide range of external medical devices.
In case the IntelliBridge EC5 ID Module is used to provide device identification, it also acts as a hardware adapter to the device-specific connector.

Monitor Specifications

See the individual Data Sheets for measurement module, X2, MMS extension, and plug-in module specifications.

Safety Specifications

The monitors, together with the Multi-Measurement Module (M3001A), the X2 Multi-Measurement Module (M3002A) and all modules and MMS extensions, comply with the Medical Device Directive 93/42/EEC (CE$_{0366}$) and with IEC 60601-1:1988 + A1:1991 + A2:1995; EN60601-1:1990 + A1:1993 + A2:1995; UL 60601-1:2003; CAN/CSA C22.2#601.1-M90 + Suppl. No 1-94 + Am.2; IEC 60601-1-1:2000; EN 60601-1-1:2001; IEC 60601-1-2:2001 +A1:2004; EN 60601-1-2:2001 +A1:2006.
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 14971 and IEC/EN60601-1-4.
This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme à la norme NMB-001 du Canada.

Physical Specifications

Product	Max Weight[a]	W x H x D[b]
MX550 Monitor	7.0 kg (15.4 lb)	<404 x308 x 184 mm (15.9 x 12.1 x 7.2 in)
M3001A Multi-Measurement Module (MMS)	<650 g (<1.4 lb)	188 x 96.5 x 51.5 mm (7.4 x 3.8 x 2 in)
M3002A Multi-Measurement Module (MMS)	<1.25 kg (<2.8 lb)	188 x 99 x 86 mm (7.4 x 3.9 x 3.4 in)
M3012A Hemodynamic MMS Extension	<550 g (1.2 lb)	<190 x 98 x 40 mm (<7.5 x 4 x 1.6 in)
M3014A Capnography MMS Extension	<500 g (<1.1 lb)	<190 x 98 x 40 mm (<7.5 x 4 x 1.6 in)
M3015A Microstream CO_2 MMS Extension	<550 g (<1.21 lb)	<190 x 98 x 40 mm (<7.5 x 4 x 1.6 in)
M1006B Invasive Press Module	190 g (6.7 oz) Option #C01: 220 g (7.9 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
M1029A Temperature Module	215 g (7.6 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)

Product	Max Weight[a]	W x H x D[b]
M1012A Cardiac Output Module	225 g (7.9 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
M1014A Spirometry Module	250 g (8.8 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
M1020B SpO$_2$ Module	200 g (<8.8 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
M1011A SO$_2$ Module	190 g (7.1 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
- Optical Module	<200 g (7.1 oz) including 2.9 m cable	50 x 30 x 120 mm (2.0 x 1.2 x 4.7 in)
M1027A Electroencephalograph Module	210 g (7.4 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
865115 IntelliBridge EC10 Module	190 g (7.0 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)
865114 IntelliBridge EC5 ID-Module	35 g (1.2 oz)	35 x 17 x 57 mm (1.4 x 0.7 x 2. in)
M1116B/C Thermal Array Recorder Module	500 g (1.1 lbs)	72.5 x 103.5 x 115.5 mm (2.85 x 4.1 x 4.5 in)
865244 Remote Control	<250 g (8.8 oz)	53 x 172 x 24 mm (2.1 x 6.7 x 0.9 in)
865383 NMT Module	210 g (7.4 oz)	36 x 103.5 x 110 mm (1.4 x 4.1 x 4.3 in)

a ± 5%
b ± 5%

Environmental Specifications

MX550Monitors

Item	Condition	Range
Temperature Range	Operating	0 – 40°C (32 – 100°F). When charging battery, or M3002A is mounted on back, or with Smart Hopping Interface 0 – 35°C (32 – 95°F)
	Storage	-20 – 60°C (-4 – 140°F)

MX550Monitors

Item	Condition	Range
Humidity Range	Operating	15% to 95% Relative Humidity (RH) (non condensing)
	Storage	5% – 95% Relative Humidity (RH)
Altitude Range	Operating	-500 – 3000 m (10000 ft)
	Storage	-500 – 4600 m (15000 ft)
Ingress Protection		IP21

Remote Control 865244

Item	Condition	Range
Temperature Range	Operating	0 – 40°C (32 – 100°F)
	Storage	-20 – 60°C (-4 – 140°F)
Humidity Range	Operating	15% – 95% Relative Humidity (RH) (non condensing)
	Storage	5% – 95% Relative Humidity (RH)
Altitude Range	Operating	-500 – 3000 m (10000 ft)
	Storage	-500 – 4600 m (15000 ft)

Performance Specifications

MX550Performance Specifications

Power Specifications	Power Consumption	<70 W average
	Line Voltage	100 – 240 V
	Current	1.2 – 0.5 A
	Frequency	50/60 Hz
WXGA (15:9) Display 15 inch		390 mm active matrix color LCD (TFT)
	Resolution	1280 x 768
	Refresh rate	59.9 Hz
	Useful screen	334.1 x200.5 mm
	Pixel pitch	0.261 x 0.261

Indicators	Alarms Off	red (crossed out alarms symbol) LED
	Alarms	red/yellow/light blue (cyan) LED
	On/Standby/Error	green/red LED integrated in power switch
	External Power	green LED
	Battery	red-green-yellow LED
Sounds		• Audible feedback for user input • Prompt tone • QRS tone, or SpO_2 modulation tone • 4 different alarm sounds • Remote tone for alarms on other beds in network • Tone for Timer expired
Trends	Resolution	16, 24 or 32 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. For example: Neonatal: 24 numerics, 9 hours @ 12 seconds. Intensive care: 32 numerics, 48 hours @ 5 minutes. Anesthesia: 32 numerics, 5 hours @ 12 seconds.
High Res Trend Waves	Measurements available	HR, SpO_2, Resp, $tcpO_2$, Pulse, Perf, $tcpO_2$, CO_2, ABP, PAP, CVP, ICP, CPP, CCO, AWP, Anesthetic Agents, Delta SpO_2, inO_2.
	Resolution	Measurement samples are taken at a resolution of four samples per second.
	Update speed	waves are drawn at a speed of 3 cm/minute.

Events	Information	trigger condition and time, event classification and associated detailed view of episode data.
	Episode data	configurable, either: 4 minutes of high resolution trend or 20 minutes of numerics trend @ 12 sec resolution or 15 seconds of 4 waves @ 125 samples/sec (Snapshot) including all current numerics, alarms and inops.
	Capacity (max)	25 or 50 events for either 8 or 24 hours.
Alarm Signal	System delay	less than 3 seconds.
	Pause duration	1,2,3 minutes or infinite, depending on configuration.
	Extended alarm pause	5 or 10 minutes
Review Alarms	Information	all alarms / inops, main alarms on /off, alarm silence 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	infinite if powered by AC; otherwise at least 48 hours (typical: >72 hours).
Buffered Memory	Hold Time	If powered by AC: infinite. Without power: at least 48 hours.
	Contents	Active settings, trends, patient data, realtime reports, events, review alarms.

865244 Remote Control Performance Specifications

Power (when not connected to the USB interface of the monitor)	Two AA primary cells

Interface Specifications

MX550 Interface Specifications

Network	Standard	10BASE-T and 100Base-TX (IEEE 802.3), auto-negotiation, full and half-duplex
	Connector	RJ45 (8 pin)
	Isolation	basic insulation (reference voltage: 250 V; test voltage: 1500 V)
USB Interface	Standard	USB 2.0 high-speed
	Connector	USB series "Standard A" receptacle
	Power	Low power port 4.4 V min., max. load for all ports together 500 mA
	Isolation	none
Video Interface[a]	Connector	DVI-I (digital and analog, single link).
	Digital video signals	single link TMDS
	Analog video signals	0.7 Vpp@75Ω
	HSYNC/VSYNC signals	TTL
Dual MIB/ RS-232 Interface[b]	Standard	IEEE 11073 30200
	Connector	RJ45 (eight pin)
	Mode	BCC (RxD/TxD cross over) or DCC (RxD/TxD straight through).
	Power	5 V ±5%, 100 mA (max.)
	Isolation	basic insulation (reference voltage: 250 V, test voltage: 1500 V)

MX550 Interface Specifications

Flexible Nurse Call Interface[b]	Connector	20 pin MDR (Mini D-Ribbon), active open and closed contacts.
	Contact	<= 100 mA, <= 24 V DC
	Isolation	basic insulation (reference voltage: 250 V; test voltage: 1500 V)
	Delay	< (Configured Latency +0.5 sec)
IntelliBridge EC10 IF Board	Connector	Modular Jack 8P8C
	Power	5 V 5% @ 0 – 100 mA[c]
	Isolation	double insulation (reference voltage: 250 V; test voltage: 4000 V)
	Connectivity	RS-232/LAN
Smart Hopping IF 1.4 GHz (USA only)	Type	Internal WMTS Adapter
	Technology	compatible with Philips Cellular Telemetry System (CTS), cellular infrastructure.
	Frequency Band	WMTS, 1395 – 1400 MHz and 1427 – 1432 MHz
Smart Hopping IF 2.4 GHz	Type	Internal ISM Adapter
	Technology	compatible with Philips Cellular Telemetry System (CTS), cellular infrastructure.
	Frequency Band	2.4 GHz ISM

MX550 Interface Specifications

802.11 Wireless IF (Wireless Network Adapter)	Type	Internal Wireless Adapter
	Technology	IEEE 802.11a/b/g
	Frequency Band	2.4 GHz and 5 GHz Band
	Modulation technique	DSSS (CCK, DQPSK, DBPSK), OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
	Effective radiated power	max. 16 dBm (40 mW)
Short-Range Radio Interface	Type	Internal SRR interface
	Technology	IEEE 802.15.4
	Frequency band	2.4 GHz ISM (2.400 – 2.483 GHz)
	Modulation technique	DSSS (O -QPSK)
	Effective radiated power	max. 0 dBm (1 mW)
Measurement Server Link (MSL)	Connectors	MSL out (Proprietary)
	Voltage	48 V ±10 %
	Power	12 W
	Power Sync.	5 V CMOS Level, 78.125 kHz (typical)
	LAN signals	IEEE 802.3 10-Base-T compliant
	Serial signals	RS-422 compliant

ECG Sync Output/Analog ECG Output

General	Connector	(1/4 in stereo phone jack with tip, ring, sleeve)
	Isolation	none
	Short circuit current	<13 mA
Analog ECG Output (ring, tip) (Ring/Channel 2 is configurable to either Analog ECG Output or Digital Pulse Output)	Gain error	<15%
	Baseline offset Error	<150 mV
	Bandwidth	1 – 100 Hz
	Output voltage swing	±4 V (min.)
	Signal delay	<20 ms
	Signal delay with older versions of the M3001A MMS[d]	<30 ms

MX550 Interface Specifications

Digital Pulse Output (ring) (Ring/Channel 2 is configurable to either Analog ECG Output or Digital Pulse Output)	Output low voltage level	<0.4 V @ I= -1 mA
	Output high voltage level	>2.4 V @ I= 1 mA
	Pulse Width	100 ms ±10 ms (active high)
	Pulse Rise Time	<1 ms
	Signal delay	<25 ms
	Signal delay with older versions of the M3001A MMS[d]	< 35 ms

Advanced System Interface[e]

RS-232/5 V	Standard	IEEE 11073 30200
	Connector	RJ45 (eight pin)
	Mode	BCC (RxD/TxD cross over)
	Power	5 V ±5%, 100 mA (max.)
	Isolation	basic insulation (reference voltage: 250 V; test voltage: 1500 V)
USB Interface (2 ports)	Standard	USB 2.0 full-speed (Embedded host)
	Connector	USB series "Standard A" receptacle
	Power	Low power port 4.4 V min., max. load for all ports together 500 mA
	Isolation	none
Basic Nurse Call Relay	Connector	Modular Jack 6P6C, active open and closed contact.
	Contact	<=100 mA, <=24 V DC
	Isolation	basic insulation (reference voltage: 250 V, test voltage: 1500 V)
	Delay	<Configured Latency +0.5 sec

a Hardware Standard, option J15 enables video output.
b Optional: See Hardware Options.
c used to supply the IntelliBridge EC5
d (identifiable with the serial number prefix DE227 or DE441 and option string #A01)
e Optional: See Hardware Options.

Battery Specifications

Philips high-power battery M4605A, 10.8 V 6000 mAh Lithium-Ion.
• Weight: 490 g per battery
• Status LEDs indicate charge status of batteries
• Safety: complies with UL1642 (UL recognised)
• Electromagnetic compatibility: complies with the requirements for FCC Type B computing Device, and EN 61000-4-2 and EN 61000-3
• Communication Standard: complies with the SMBus specification v1.1

Battery Operating Time

(New and fully loaded battery):
– With basic monitoring configuration: 2.5 hours (brightness set to optimum, MMS connected, NBP measurement every 15 minutes)
– With extended monitoring configuration: 2 hours (brightness set to optimum, MMS and MMS extension connected, NBP every 15 minutes, Recorder, Pressure, Temperature modules connected)

Battery Charge Time:

– When monitor is switched off: 3 hours
– When monitor is in use: up to 5 hours, depending on monitor configuration.

Ordering Information

Ordering information for the 866066 (MX550) is given here. See the individual Data Sheets for detailed ordering information for the multi-measurement module family, MMS extensions and plug-in modules

Monitor Capability Options[1]

Basic Functionality	866066
General Care Software (Default)[a]	H01
Intensive Care Software	H11
Neonatal Care Software	H21
Anesthesia Software	H31
Cardiac Care Software	H41

a Check availability in your region.

Waveform Capability	866066
4 Real-time Wave Segments (Default)	A04
6 Real-time Wave Segments[a]	A06

a Check availability in your region.

Measurement Capability	866066
Support two additional Pressures	M06
Support one additional SpO_2	M20

Application Options[2]

Clinical Applications	866066
Drug Calculator	C05
Basic Event Surveillance	C06
Advanced Event Surveillance	C07
Parameter Histograms	C09
PV Loops	C21

ProtocolWatch

Clinical Packages	866066
Extended Clinical Applications	CP1
Extended ECG Capabilities	CP2

Protocol Watch	866066
Severe Sepsis Screening	P01
SSC Sepsis Protocol	P02
IntelliVue Guardian EWS	P05

[1] One Hxx option and one Axx option must be chosen.
[2] availability may depend on choice of Hxx option

Hardware Options

Hardware Add-Ons	866066
Remote Control	E00
Bed Hanger Mount	E21
Quick Release Mount	E22
One Li-ion battery	E24

Interface Options

Wired Interfaces[a]	866066
MIB/RS-232 (2 ports) Interface[b]	J13
Adaptive Secondary Display	J15
USB Interface	J25
Flexible Nurse Call IF	J30
IntelliBridge EC10 IF Board	J32
Advanced System Interface	J40

a Check availability in your region.
b Hardware supports multiple boards of this type.

Measurement Options

Wireless Interfaces[a]	866066
802.11 Wireless IF	J35
Smart Hopping IF 1.4 GHz	J45
Short-Range Radio	J46
Smart Hopping IF 2.4 GHz	J47

a Check availability in your region.

Measurements		Option
Measurement Modules		
Multi-Measurement Module, for Resp, ECG (inc. EASI), NBP, SpO_2 (FAST SpO_2 (#A01), Masimo SET (#A03),Nellcor OxiMax Technology (#A04)), and Pressure/Temperature, See the MMS Data Sheet for details.	M3001A	A01, or A03[a] or A04
Add Press/Temp		C06
Add Press/Temp and Conventional 12 lead ECG		C18
X2 Multi-Measurement Module, for Resp, ECG (inc. EASI), NBP, SpO_2 (FAST SpO_2 (#A01), Masimo SET (#A03), Nellcor OxiMax Technology (#A04)), and Pressure/ Temperature. See the X2 Data Sheet for details.	M3002A	A01, or A03[a] or A04
MMS Extensions		
Microstream CO_2 Extension	M3015A	
Add Press/Temp		C06

Measurements		Option
Microstream CO_2 Extension (with dual Invasive Pressure and Temperature measurements)	M3015B	C08
Hemodynamic Extension (with Press, Temp, Press/Temp)	M3012A	
Add C.O.		C05
Add C.O./CCO		C10[b]
Capnography Extension	M3014A	
Add Press, Press/Temp and C.O.		C05
Add Press and Press/Temp		C07
Add Press, Press/Temp and C.O./ CCO		C10[b]
Measurement Modules		
See the individual module Data Sheets for details.		
Invasive Blood Pressure	M1006B[c]	
SO_2	M1011A	
Cardiac Output with CCO	M1012A	
Spirometry	M1014A	
SpO_2 (FAST SpO_2)	M1020B	A01
SpO_2 (Nellcor Compatible)	M1020B	A02
SpO_2 (Masimo SET)	M1020B	A03
EEG	M1027A	
Temperature	M1029A	
Thermal Array Recorder	M1116B	
Thermal Array Recorder	M1116C	
IntelliBridge EC10	865115	
NMT	865383[b]	
Gas Analyzers		
IntelliVue G1	M1013A	
IntelliVue G5	M1019A	
IntelliVue TcG10[d]	865298	

a May not be available in all countries.
b Not available in the U.S.A., Canada or territories relying on FDA Market clearance.
c Option #C01 provides an analog output signal.
d May not be available in all countries

Related Products

Related Products	Model Number
Input Devices	M8024A
Slimline keyboard with protective cover	M8024A #A01
Mouse; wired	M8024A #B01
Trackball; wired	M8024A #C01
Trackball; wireless	M8024A #C02
Tabletop wired Trackball	M8024A #C03
Remote Control	865244

Related Products	Model Number
Support Tool – Orderable via InCenter: http://www3.medical.philips.com/resources/hsg/docs/en-us/custom/intellivue_order.asp	M3086A DVD
Accessory	
External Battery Charger	865432
Philips IntelliVue Battery Extension (provides additional power to a combination of MMS Extension and M3002A IntelliVue X2 Multi-Measurement Module for situations when no mains power is available, for example, during transport).	865297

Cables

Length	Description	Product/Option
MSL Cable		
0.75 m	Monitor to MMS	M8022A #SC1
2 m	Monitor to MMS	M8022A #SC2
4 m	Monitor to MMS	M8022A #SC4
10 m	Monitor to MMS	M8022A #SC6
MIB/RS-232 Cables		
1.5 m	Serial cable	M8022A #SR2
3.0 m	Serial cable	M8022A #SR3
10.0 m	Serial cable	M8022A #SR6
15.0 m	Serial cable	M8022A #SR7
25.0 m	Serial cable	M8022A #SR9
Touch Cables		
1.5 m	Touch cable	M8022A #TC2
3.0 m	Touch cable	M8022A #TC3
10.0 m	Touch cable	M8022A #TC6
15.0 m	Touch cable	M8022A #TC7
25.0 m	Touch cable	M8022A # TC9
Nurse Call Relay Cable		
3.0 m	standard (backward compatible) nurse paging relay cable[a]	M8022A #NS3
10.0 m	cable	M8022A #NS6
ECG Out Cable		
3.0 m	standard ECG out cable[b]	M8022A #SY3
25 m	ECG Sync Extension cable	M8022A #SY9

a One end terminated with 6P6C connector; other end w/o connector.
b Both ends terminated with 1/4 in phone plug.

Mounting Information

For mounting hardware, contact your local Philips sales representative.

For more information, see http://www.medical.philips.com/main/

products/patient_monitoring/products/mounting_solutions/mounting_solutions_homepage.wpd.

Documentation

All documentation is available in .pdf format on documentation DVD and is shipped with the product. Additionally, a printed copy of the Instructions for Use ships with each monitor.

• Instructions for Use (printed)
• Documentation DVD including:
  – Installation and Service Guide
  – Configuration Guide
  – Quick Guides
  – Application Notes
  – Training Guide
  – Compatibility Matrix

Upgrade Options

Description	Option #
Waves	
Upgrade from 4 to 6 waves[a]	A06
Interfaces	
MIB/RS-232 Interface (2 ports)	J13
Adaptive Secondary Display[a]	J15
USB Interface	J25
Flexible Nurse call Interface	J30
IntelliBridge EC10 IF Board[a]	J32
802.11 Wireless IF	J35
Advanced System Interface	J40
Smart Hopping IF 1.4 GHz[a]	J45
Smart Hopping IF 2.4 GHz[a]	J47
Short-Range Radio[a]	J46
Clinical Applications	
Drug Calculator	C05
Basic event Surveillance	C06
Advanced Event Surveillance	C07
Parameter Histograms	C09
Hardware Add-On	
Independent Display Interface	E42
Protocol Watch	
Severe Sepsis Screening	P01
SSC Sepsis Protocol	P02
Measurement Capability Options	
Support one additional IBP	M20

a Check availability in your region.

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866066 complies with the requirements of
the Council Directive 93/42/EEC of 14 June
1993 (Medical Device Directive).

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