



# IntelliVue MX800 Patient Monitor

## Philips 865240 Technical Data Sheet

The Philips IntelliVue MX800 patient monitor offers a flexible and modular monitoring solution, designed to suit a broad spectrum of needs. The monitor can be connected to the Philips Multi-Measurement Module (MMS) family with its extensions, plug-in measurement modules and the IntelliVue anesthetic gas modules to extend its functionality with plug-and-play convenience. Dedicated configurations are available for the anesthesia, critical and cardiac, and neonatal care environments. The integrated PC (iPC) allows access to relevant patient information residing on the hospital's intranet.

### 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 ten 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.

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- User or case-specific profiles enable rapid case turnover.
- 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.
- Second independent display capability using Independent Display interface, the iPC or IntelliVue XDS.
- The iPC can host Windows applications and safely share the display with the MX800's realtime system or drive a second display, independent of size and resolution. The content displayed on the second display can be different from the content on the main display of the MX800 and can show either realtime vital signs information, PC applications or both at the same time. A separate isolated LAN interface allows access to the hospital's backbone independent of the MX800. 5 USB interfaces provide connectivity to external computer devices, e.g. printers or input devices such as the touch interface of the selected display
- Bedside information access using the iPC, Portal technology and/or IntelliVue XDS Clinical Workstation.

### Intended Use

The IntelliVue MX800 is intended to be used for monitoring, recording, and alarming of multiple physiological parameters of adults, pediatrics, and neonates in hospital environments by trained health care professionals.

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

### Modularity

The monitor's functionality can be extended by connecting Philips plug-in modules, the multi-measurement module (MMS) family with extensions, and anesthetic gas modules 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 monitor has a color 19" LCD TFT display with a wide viewing angle, providing high resolution waveform and data presentation. The MX800 integrates the display and the processing unit into one device. One external slave display can be connected to a built-in DVI-I port.

A second independent display can be connected via the optional Independent Display Interface, the iPC or the IntelliVue XDS. Multiple display resolutions including widescreen formats are supported on the Independent Display Interface and the iPC as well as on the XDS display.

### Integrated PC (iPC)

The iPC is a fan-less, medical grade PC residing within the MX800 and as such designed for continuous operation in the patient vicinity. The iPC uses MS Windows 7 (or XP) as operating system and can host respective applications. These applications can either be:

- Windows applications, such as Internet Explorer,
- Philips applications such as iSite clients or an application launch pad,
- Third party applications or
- Hospital owned and developed software.

The iPC is designed as an "open" PC and such can be serviced and maintained by the hospital's IT department as well as by Philips.

A separate isolated LAN interface allows access to the hospital's backbone independent of the MX800.

The iPC can safely share the main display with the MX800 (single display setup) and/or be used with a standard or a medical grade display (dual display setup), either provided by Philips or another manufacturer. The iPC supports displays with or without touch operation.

The iPC has five USB 2.0 ports supporting High-Speed mode for computer peripherals such as keyboard, mouse, barcode reader, touch display etc.

### 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 MX800 displays up to twelve waves simultaneously. For 12-lead ECG monitoring it can display 12 real-time ECG waves, with a rhythm strip and all ST values.

The Basic Help provides on-screen operating help, explaining INOP and alarm messages.

### Touchscreen Operation

The touchscreen is the primary method of operation for the MX800 monitors. The touchscreen displays have resistive touch surfaces.

### Remote Control

The 865244 Remote Control can be connected to the MX800 monitor via USB and then 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.

### Simulated 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.

### Barcode Reader

A USB barcode reader in “keyboard emulation mode” can be used via a USB connection.

### Multi-Measurement Module

The M3001A Multi-Measurement Module (MMS) can be connected without cables onto the side of the Flexible Module Rack (FMS). The MMS can also be connected to the monitor or FMS 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<sub>2</sub>), Non-Invasive Blood Pressure (NBP), and Invasive Pressure or Temperature. It features 12-lead ECG capability, multi-lead arrhythmia, and 12-lead ST analysis.

An MMS Extension can optionally be slotted onto the 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<sub>2</sub> 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<sub>2</sub><sup>1</sup> measurement (M3015A).

### X2 Multi-Measurement Module

The M3002A X2 Multi-Measurement Module can be connected without cables onto the side of the Flexible Module Rack (FMS). The X2 can also be connected to the monitor or FMS with cables in order to place it in patient vicinity. It sends measurement waves and numerics to the



IntelliVue X2 Multi-Measurement Module

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.

The X2 provides measurement data for Electrocardiogram (ECG)/ Arrhythmia, Respiration, Oxygen Saturation of Arterial Blood (SpO<sub>2</sub>), CO<sub>2</sub>, Non-Invasive Blood Pressure (NBP), and Invasive Pressure or Temperature. It features 12-lead ECG capability, multi-lead arrhythmia, and 12-lead ST analysis.

An MMS Extension can optionally be slotted onto the X2 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<sub>2</sub> measurement and optionally a

<sup>1</sup> Microstream is a registered trademark of Oridion Systems Ltd.

Cardiac Output/Continuous Cardiac Output measurement (M3014A), or

- an additional Invasive Pressure or Temperature measurement (one at a time) and a Microstream® CO<sub>2</sub><sup>1</sup> measurement (M3015A).

The X2 can also be used as a stand-alone monitor.

### Flexible Module Rack with Plug-In Modules



The Flexible Module Rack has eight slots for plug-in measurement modules.

Individual plug-in measurement modules are available to measure:

- M1006B Invasive Blood Pressure
- M1011A Intravascular Oxygen Saturation Module (SO<sub>2</sub>)
- M1012A Cardiac Output/Continuous Cardiac Output
- M1014A Spirometry
- M1018A Transcutaneous Gas
- M1020B SpO<sub>2</sub>
- M1021A Mixed Venous Oxygen Saturation (SvO<sub>2</sub>)
- M1027A Electroencephalograph (EEG)
- M1029A Temperature
- M1034A Bispectral Index (BIS<sup>TM</sup>)<sup>2</sup>

Additional plug-in modules available are:

- M1116B Thermal Array Recorder
- M1032A VueLink Device Interface.
- 865115 EC10 IntelliBridge

### IntelliVue Anesthetic Gas Modules

Versatile IntelliVue G1 and G5 gas modules measure the five most commonly used anesthetic gases, as well as N<sub>2</sub>O and CO<sub>2</sub>. 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 module measures the single agent chosen by the clinician. The IntelliVue G5 features automatic agent identification and mixed-agent measurement capability. Advanced O<sub>2</sub> technology based on paramagnetic measurements is optional with the G1 and included standard with the G5. Additionally, the AGM (Anesthetic Gas Module) offers auto-ID and single agent measurement capabilities.

<sup>1</sup> Microstream is a registered trademark of Oridion Systems Ltd.

<sup>2</sup> Bispectral Index and BIS are registered trademarks of Aspect Medical Systems, Inc.

### Mounting

The mounting options available 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** and the **Anesthetic Gas Module (AGM)** measure the five most commonly used anesthetic gases, as well as N<sub>2</sub>O and CO<sub>2</sub>.
- The **BIS** module assesses the level of consciousness in the OR, providing a measure of the effect of anesthetic agents.
- **VueLink** provides an external device interfacing capability to Anesthesia Machines and other external instruments which have a serial RS-232 and/or analog output. It generates alarms and provides up to two waves and six numerics, depending on the device.
- 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 6 stored loops simultaneously. This assists in early detection of patient airway problems (e.g. atelectasis, bronchospasm) and ventilator problems (e.g. leaks and kinked tubes).
- The **Spirometry Module** provides airway pressure, volume and flow measurements to monitor changes in respiratory status.

#### 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  $\Delta$ QTc 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, using either the EASI placement method with five standard electrodes or conventional electrode placement with 10 electrodes.<sup>1</sup> 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<sub>2</sub> 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.<sup>2</sup>
- **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.
- **BIS** monitoring provides sedation assessment in critical and cardiac care environments.
- **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 M1116B Recorder.

<sup>1</sup> 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.

<sup>2</sup> PiCCO™ is a trademark of Pulsion Medical Systems AG.

- 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.
- In Event Surveillance, in the NER group, you can run a 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.

### IntelliVue Applications

#### Clinical Decision Support

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.

## Trends

- A choice of four **standard** trend database configurations is provided, designed to suit specific application areas. Patient data from up to 16 measurement numerics can be sampled every 12 seconds, one minute, or five minutes, and stored for a period ranging from four to 48 hours.
- With the **extended** trends database, the number of measurement numerics trended or the period can be increased.
- **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.
- 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. (e.g. eight for wave option #A08).
- **Horizon Trends** show the deviation from a stored baseline.
- Trended values can be viewed in the form of a histogram. The SpO<sub>2</sub> 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 M1116B Recorder Module. Events are also marked on the Event Line of an Information Center. The *standard 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.

## 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
  - 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 plug-in recorder records numerics for all active measurements and up to three wave forms. It can be used for local recording in the FMS.

## Alarms

The alarm system can be configured to present either the traditional HP/Agilent/Philips alarm sounds or sounds compliant with the ISO/IEC 9703-2 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.

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 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.

## Patient Transfers

- The Universal Admit, Discharge and Transfer (ADT) feature means that all ADT information is shared between the networked monitor and the Information Center. 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.

## 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. These profiles can be changed, added to, renamed, or deleted.

## Networking Capabilities

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

## 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.

## 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 (LVSWS)
- Left Ventricular Stroke Work Index (LVSWSI)
- Right Cardiac Work (RCW)
- Right Cardiac Work Index (RCWI)
- Right Ventricular Stroke Work (RVSWS)
- Right Ventricular Stroke Work Index (RVSWSI)
- Extra Vascular Lung Water Index (EVLWI)
- Intrathoracic Blood Volume Index (ITBVI)
- Global End Diastolic Volume Index (GEDVI)

#### Oxygenation Calculations:

- Arterial Oxygen Content (CaO<sub>2</sub>)
- Venous Oxygen Content (CvO<sub>2</sub>)
- Arteriovenous Oxygen Content (CavO<sub>2</sub>)
- Oxygen Availability(DO<sub>2</sub>)
- Oxygen Availability Index (DO<sub>2</sub>I)
- Oxygen Consumption (VO<sub>2</sub>)
- Oxygen Consumption Index (VO<sub>2</sub>I)
- Oxygen Extraction Ratio (O<sub>2</sub>ER)
- Alveolar-Arterial Oxygen Difference (AaDO<sub>2</sub>)
- Percent Arteriovenous Shunt (Q<sub>s</sub>/Q<sub>t</sub>)

#### 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 (e.g. lbs to kgs).

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:

- Multi-Measurement Module (MMS) family (M3001A, M3002A), and its extensions (M3012A, M3014A, M3015A, M3016A)
- IntelliVue XDS Solution
- External devices via Vuelink and/or IntelliBridge EC10 Module
- Flexible Module Rack
- Anesthetic Gas Modules
- Information Center (for example, M3150B)
- Slave Display

- Independent Display

#### Network Interface

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

#### Wireless Network

Option J20 and J35 enable the monitor to function within a wireless infrastructure. The infrastructure is based on an IEEE 802.11 a/b/g network in the 2.4 GHz or 5 GHz bands (ISM). Additional components are required to complete the system. Please refer to the M3185A IntelliVue Clinical Network Technical Data Sheet for further information.

#### MIB/RS-232 Interface

MIB, Medical Information Bus (IEEE P1073), is a standard for interfacing medical devices, allowing full integration of these devices. The monitors have a serial MIB/RS-232 interface with one fully-isolated MIB port. Additional MIB/RS232 I/O boards 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 an anesthetic gas module
- Data Out can be configured up to two times for each monitor. Note that only the first MIB/RS232 port configured to Data Out (i.e. the first one to receive a request) provides wave export. A second MIB/RS232 port configured to Data Out will only export numerics

#### Device Interface (USB Interfaces)

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

Because the patient monitor software only supports two input devices, only two input devices can be connected to the USB interface on the connector board. For this purpose, the four USB ports are divided into two groups, and only one input device per group is allowed.

#### Independent Display Interface

The optional independent display interface allows the connection of a second display which can be configured and operated individually using standard input devices.

#### Specifications

##### 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 the Flexible Module Rack (M8048A), all modules and MMS extensions, comply with the Medical Device Directive 93/42/EEC (CE<sub>0366</sub>) and with IEC 60601-1:1988 + A1:1991 + A2:1995; EN60601-1:1990 + A1:1993 + A2:1995; UL 2601-1:1994; CAN/CSA C22.2#601.1-M90; IEC 60601-1-1:2000; EN 60601-1-1:2000; IEC 60601-1-2:2001; EN 60601-1-2:2001.

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. C'est appareil ISM est conforme a la norme NMB-001 du Canada.

### Physical Specifications

| Product                                  | Max Weight          | W x H x D                                      |
|------------------------------------------|---------------------|------------------------------------------------|
| MX800 Monitor                            | <12 kg<br><26.4 lb  | <478 x 364 x 152 mm<br>18.82 x 14.33 x 5.98 in |
| M3001A<br>Multi-Measurement Module (MMS) | <650 g<br><1.4 lb   | 188 x 96.5 x 51.5 mm<br>7.4 x 3.8 x 2 in       |
| M3002A<br>Multi-Measurement Module (MMS) | <1.25 kg<br><2.8 lb | 188 x 99 x 86 mm<br>7.4 x 3.9 x 3.4 in         |
| M3012A<br>Hemodynamic MMS Extension      | <550 g<br>1.2 lb    | <190 x 98 x 40 mm<br><7.5 x 4 x 1.6 in         |
| M3014A<br>Capnography MMS Extension      | <500 g<br><0.99 lb  | <190 x 98 x 40 mm<br><7.5 x 4 x 1.6 in         |
| M3015A<br>Microstream CO2 MMS Extension- | <550 g<br><1.21 lb  | <190 x 98 x 40 mm<br><7.5 x 4 x 1.6 in         |
| M3016A<br>Mainstream CO2 MMS Extension   | <450 g<br><0.99 lb  | <190 x 98 x 40 mm<br><7.5 x 4 x 1.6 in         |
| M8048A<br>Flexible Module Rack (FMS)     | <3500 g<br><7.7 lb  | <320 x 135 x 120 mm<br>12.6 x 5.3 x 4.7 in     |
| M8025A<br>Remote Alarm Device            | <300 g<br><0.7 lb   | 62 x 125 x 63 mm<br>2.4 x 5 x 2.5 in           |

| Product                                                     | Max Weight                             | W x H x D                                                                                        |
|-------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------|
| M1006B<br>Invasive Press Module<br>Option<br>#C01:          | 190 g<br>(6.7 oz)<br>225 g<br>(7.9 oz) | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| M1029A<br>Temperature Module                                | 215 g<br>(7.6 oz)                      | 36 x 99.6 x 97.5 mm,<br>1.4 x 3.9 x 3.8 in                                                       |
| M1012A<br>Cardiac Output Module                             | 225 g<br>(7.9 oz.)                     | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| M1014A<br>Spirometry Module                                 | 250 g<br>(8.8 oz.)                     | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| M1018A<br>Transcutaneous Gas Module                         | 350 g<br>(11.3 oz)                     | 72.5 x 99.6 x 97.5 mm,<br>2.9 x 3.9 x 3.8 in                                                     |
| M1020B<br>SpO2 Module                                       | <250 g<br>0.55 lb                      | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| M1021A<br>Mixed Venous Oxygen Saturation Module             | 460 g<br>(13.04 oz )                   | 72.5 x 99.6 x 97.5 mm<br>2.9 x 3.9 x 3.8 in                                                      |
| M1011A<br>SO2 Module<br>- Optical Module                    | <200g<br>(7.1 oz)<br><200g<br>(7.1 oz) | 36 x 99.6 x 102.5 mm<br>1.4 x 3.9 x 4.0 in<br>50 x 30 x 120 mm<br>2.0 x 1.2 x 4.7 in             |
| M1027A<br>Electroencephalograph Module                      | 210 g<br>(7.4 oz)                      | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| M1034A<br>BIS Interface Module                              | 215 g<br>7.6 oz                        | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| BISx<br>- DSC Digital Signal Converter<br>(without cabling) | 499 g<br>1.1 lb<br>130 g<br>(4.6 oz)   | 95.3 x 63.5 mm<br>(diameter x height)<br>3.8 x 2.5 in<br>66 x 25 x 107 mm<br>2.6 x 1.0 x 4.25 in |
| - BIS Engine                                                | 170 g<br>(6.0 oz)                      | 43 x 93 x 95 mm<br>1.7 x 3.7 x 3.7 in                                                            |
| M1032A<br>Vuelink Module                                    | 240 g<br>(8.4 oz)                      | 36 x 99.6 x 97.5 mm<br>1.4 x 3.9 x 3.8 in                                                        |
| 865115<br>IntelliBridge EC10 Module                         | 200 g<br>(7.0 oz)                      | 36 x 99.6 x 102.5 mm<br>1.4 x 3.9 x 4.0 in                                                       |

| Product                                    | Max Weight          | W x H x D                                |
|--------------------------------------------|---------------------|------------------------------------------|
| 865114<br>IntelliBridge EC5 Module         | 35 g<br>(1.1 oz)    | 35 x 17 x 57 mm<br>1.4 x 0.7 x 2.1 in    |
|                                            | 25 g<br>(0.8 oz)    | 21.5 x 17 x 65 mm<br>0.9 x 0.7 x 2.6 in  |
| M1116B<br>Thermal Array Recorder<br>Module | 507.5 g<br>17.9 oz. | 73 x 99.6 x 97 mm<br>2.9 x 3.6 x 3.9 in. |
|                                            | <250 g              | 53 x 165 x 23 mm<br>2.1 x 6.5 x 0.9 in   |

### Environmental Specifications

| MX800 Monitor      |           |                                                      |
|--------------------|-----------|------------------------------------------------------|
| Item               | Condition | Range                                                |
| Temperature Range  | Operating | 0 to 40°C (32 to 100°F)                              |
|                    | Storage   | -20 to 60°C (-4 to 140°F)                            |
| Humidity Range     | Operating | 15 % to 95 % Relative Humidity (RH) (non condensing) |
|                    | Storage   | 5 % to 95 % Relative Humidity (RH)                   |
| Altitude Range     | Operating | -500 m to 3000 m (10000 ft)                          |
|                    | Storage   | -500 m to 4600 m (15000 ft)                          |
| Ingress Protection |           | IPX1                                                 |

| Remote Control 865244 |           |                                                      |
|-----------------------|-----------|------------------------------------------------------|
| Item                  | Condition | Range                                                |
| Temperature Range     | Operating | 0 to 40°C (32 to 100°F)                              |
|                       | Storage   | -20 to 60°C (-4 to 140°F)                            |
| Humidity Range        | Operating | 15 % to 95 % Relative Humidity (RH) (non condensing) |
|                       | Storage   | 5 % to 95 % Relative Humidity (RH)                   |
| Altitude Range        | Operating | -500 m to 3000 m (10000 ft)                          |
|                       | Storage   | -500 m to 4600 m (15000 ft)                          |
| Ingress Protection    |           | IP32                                                 |

### Performance Specifications

| MX800 Performance Specifications |                                 |                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Specifications             | Power                           | <200 W average                                                                                                                                                                                                                                                                                                                                |
|                                  | Consumption                     |                                                                                                                                                                                                                                                                                                                                               |
| Indicators                       | Line Voltage                    | 100 to 240 V                                                                                                                                                                                                                                                                                                                                  |
|                                  | Current                         | 2.0 to 3.6 A                                                                                                                                                                                                                                                                                                                                  |
|                                  | Frequency                       | 50/60 Hz                                                                                                                                                                                                                                                                                                                                      |
|                                  | Alarms Off                      | red (crossed out alarms symbol) LED                                                                                                                                                                                                                                                                                                           |
|                                  | Alarms                          | red/yellow/light blue (cyan) LED                                                                                                                                                                                                                                                                                                              |
| Sounds                           | On/Standby/Error                | green/red LED integrated in power switch                                                                                                                                                                                                                                                                                                      |
|                                  | External Power                  | green LED                                                                                                                                                                                                                                                                                                                                     |
|                                  | Audible feedback for user input | Prompt tone<br>QRS tone, or SpO2 modulation tone<br>4 different alarm sounds<br>Remote tone for alarms on other beds in network<br>Tone for Timer expired                                                                                                                                                                                     |
| Trends                           | Resolution                      | 12, 16, 24 or 32 numerics @ 12 sec, 1 minute, 5 minute resolution                                                                                                                                                                                                                                                                             |
|                                  | Information                     | Multiple choices of number of numerics, resolution and duration depending on trend option and application area.<br>For example:<br>neonatal extended 12 numerics, 24 hours @ 12 secs or 32 numerics 32 hours @ 1 minute<br>intensive care extended: 16 numerics 120 hours @ 5 minutes<br>anesthesia extended 32 numerics 9 hours @ 12 seconds |

| MX800 Performance Specifications |                        |                                                                                                                                                                                                                       |
|----------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High Res Trend Waves             | Measurements available | HR, SpO2, Resp, tcpO2, Pulse, Perf, tcpO2, CO2, ABP, PAP, CVP, ICP, CPP, BIS, CCO, AWP, Anesthetic Agents, Delta SpO2, inO2                                                                                           |
|                                  | 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                                                                                                                                                                                                             |

| MX800 Performance Specifications |           |                                                                                |
|----------------------------------|-----------|--------------------------------------------------------------------------------|
| 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<br>without power: at least 48 hours                 |
|                                  | Contents  | Active settings, trends, patient data, realtime reports, events, review alarms |

#### Interface Specifications

| MX800 Interface Specifications |            |                                                                                    |
|--------------------------------|------------|------------------------------------------------------------------------------------|
| Network                        | Standard   | 100-Base-TX (IEEE 802.3 Clause 25)                                                 |
|                                | Connector  | RJ45 (8 pin)                                                                       |
|                                | Isolation  | basic insulation (reference voltage: 250 V; test voltage: 1500 V)                  |
| MIB/RS232                      | Standard   | IEEE 1073-3.2-2000                                                                 |
|                                | Connectors | RJ45 (8 pin)                                                                       |
|                                | Mode       | Software-controllable BCC (Rx/D/TxD cross over) or DCC (Rx/D/TxD straight through) |
|                                | Power      | 5 V $\pm$ 5 %, 100 mA (max.)                                                       |
|                                | Isolation  | basic insulation (reference voltage: 250 V; test voltage: 1500 V)                  |

| MX800 Interface Specifications                                               |                |                                                                                           |
|------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------|
| USB Interface<br>(4 ports)                                                   | Standard       | USB 2.0 full-speed<br>(embedded host)                                                     |
|                                                                              | Connector      | USB series "Standard<br>A" receptacle                                                     |
|                                                                              | Power          | Low power port 4.4V<br>min; max. load for all<br>ports together 500 mA                    |
|                                                                              | Isolation      | none                                                                                      |
| RS232<br>(Standard)                                                          | Connector      | RJ45 (8-pin)                                                                              |
|                                                                              | Power          | none                                                                                      |
|                                                                              | Isolation      | basic insulation<br>(reference voltage:<br>250 V; test voltage:<br>1500 V)                |
| RS232<br>(Independent<br>Display<br>Interface)                               | Connector      | RJ45 (8-pin)                                                                              |
|                                                                              | Power          | none                                                                                      |
|                                                                              | Isolation      | basic insulation<br>(reference voltage:<br>250 V; test voltage:<br>1500 V)                |
| Basic Nurse Call<br>Relay                                                    | Connector      | RJ11, active open and<br>closed contact                                                   |
|                                                                              | Contact        | <=100 mA, <=24 V DC                                                                       |
|                                                                              | Isolation      | basic insulation<br>(reference voltage:<br>250 V; test voltage:<br>1500 V)                |
|                                                                              | Delay          | <[Configured Latency<br>+0.5] sec                                                         |
| IntelliVue<br>Instrument<br>Telemetry<br>Wireless<br>Network (USA<br>only)   | Type           | Internal WMTS<br>Adapter                                                                  |
|                                                                              | Technology     | compatible with Philips<br>Cellular Telemetry<br>System (CTS), cellular<br>infrastructure |
|                                                                              | Frequency Band | WMTS, 1395-<br>1400 MHz and 1427-<br>1432 MHz                                             |
| IntelliVue<br>Instrument<br>Telemetry<br>Wireless<br>Network<br>(except USA) | Type           | Internal ISM Adapter                                                                      |
|                                                                              | Technology     | compatible with Philips<br>Cellular Telemetry<br>System (CTS), cellular<br>infrastructure |
|                                                                              | Frequency Band | 2.4 GHz ISM                                                                               |

| MX800 Interface Specifications                                                       |                                                                 |                                                |                                            |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------|--------------------------------------------|
| IntelliVue 802.11<br>Bedside Adapter<br>(Wireless<br>Network<br>Adapter)             | Type                                                            | Internal Wireless<br>Adapter                   |                                            |
|                                                                                      | Technology                                                      | IEEE 802.11a/b/g                               |                                            |
|                                                                                      | Frequency Band                                                  | 2.4 GHz and 5 GHz<br>ISM Band                  |                                            |
| Short Range<br>Radio Interface                                                       | Type                                                            | Internal SRR interface                         |                                            |
|                                                                                      | Technology                                                      | IEEE 802.15.4                                  |                                            |
|                                                                                      | Frequency band                                                  | 2.4 GHz ISM (2.400 -<br>2.483 GHz)             |                                            |
|                                                                                      | Modulation<br>technique                                         | DSSS (O -QPSK)                                 |                                            |
| Measurement<br>Link (MSL)                                                            | Effective radiated<br>power                                     | max. 0 dBm (1 mW)                              |                                            |
|                                                                                      | Connectors                                                      | ODU out (Proprietary)                          |                                            |
|                                                                                      | Voltage                                                         | 56 V ±10 %                                     |                                            |
|                                                                                      | Power                                                           | 45 W                                           |                                            |
|                                                                                      | Power Sync.                                                     | RS-422 compliant input<br>78.125 kHz (typical) |                                            |
| Video Interface<br>(standard)                                                        | LAN signals                                                     | IEEE 802.3 10-Base-T<br>compliant              |                                            |
|                                                                                      | Serial signals                                                  | RS-422 compliant                               |                                            |
|                                                                                      | Connector                                                       | DVI-I (digital and<br>analog, single link)     |                                            |
|                                                                                      | Digital video signals                                           | single link TMDS                               |                                            |
|                                                                                      | Analog video signals                                            | 0.7 Vpp@75                                     |                                            |
|                                                                                      | HSYNC/VSYNC<br>signals                                          | TTL                                            |                                            |
|                                                                                      | DDC signals                                                     | none                                           |                                            |
|                                                                                      | DDC power                                                       | none                                           |                                            |
|                                                                                      | Video Interface<br>(Independent<br>Display Interface<br>option) | Connector                                      | DVI-I (digital and<br>analog, single link) |
|                                                                                      |                                                                 | Pixel clock<br>frequency                       | 108 MHz (max.)                             |
| Digital video signals                                                                |                                                                 | single link TMDS                               |                                            |
| Analog video signals                                                                 |                                                                 | 0.7 Vpp@75                                     |                                            |
| HSYNC/VSYNC<br>signals                                                               |                                                                 | TTL                                            |                                            |
| DDC signals                                                                          |                                                                 | I2C compliant                                  |                                            |
| DDC power                                                                            |                                                                 | 5 V ±5 %, 100 mA<br>(max.)                     |                                            |
| ECG Sync Output/Analog ECG Output (1/4" stereo phone jack<br>with tip, ring, sleeve) |                                                                 |                                                |                                            |
| General                                                                              | Connector                                                       | 1/4" phone each with<br>tip, ring, sleeve      |                                            |
|                                                                                      | Isolation                                                       | functional isolation                           |                                            |

| MX800 Interface Specifications |                                                                                                                                       |                                                                       |                  |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------|
| Analog ECG Output (ring, tip)  | Signal gain                                                                                                                           | 320 to 3200 in 19 steps                                               |                  |
|                                | Full scale on display                                                                                                                 | signal gain x measured ECG voltage                                    |                  |
|                                | Gain error                                                                                                                            | <15 %                                                                 |                  |
|                                | Baseline offset                                                                                                                       | <100 mV                                                               |                  |
|                                | Bandwidth                                                                                                                             | 1 to 100 Hz                                                           |                  |
|                                | Output voltage swing                                                                                                                  | ±4 V (min)                                                            |                  |
|                                | Signal delay                                                                                                                          | <22 ms                                                                |                  |
|                                | Signal delay with older versions of the M3001A MMS [identifiable with the serial number prefix DE227 or DE441 and option string #A01] | <30 ms                                                                |                  |
|                                | Digital Pulse Output (ring)                                                                                                           | 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                   |                                                                                                                                       | < 35ms (Pandora-13) per AAMI EC13<br>< 25ms (Pandora-2) per AAMI EC13 |                  |

#### iPC Specifications

| PC Components | Specification                  |
|---------------|--------------------------------|
| Processor     | Intel Core 2 Duo SP9300/SP9400 |
| Hard disk     | 160 GB                         |
| RAM           | 4 GB                           |

| Interfaces                              |                                    |
|-----------------------------------------|------------------------------------|
| <b>Ethernet LAN</b>                     |                                    |
| Connector                               | RJ-45                              |
| LAN signals                             | IEE 802.3 1000-Base-T compliant    |
| Reinforced insulation                   | IEC60601-1 A-k compliant           |
| <b>USB</b>                              |                                    |
| 6 external ports (5 rear, 1 right side) | USB 2.0 supporting high speed mode |
| Type A connectors                       |                                    |
| <b>Audio</b>                            |                                    |

| Interfaces                            |                                      |
|---------------------------------------|--------------------------------------|
| Microphone input stereo               | 3.5 mm audio jack                    |
| hearsphone output stereo              | 3.5 mm audio jack                    |
| <b>DVI Video with DVI-I connector</b> |                                      |
| DVI                                   | supports resolutions up to 1920x1200 |
| VGA                                   | supports resolutions up to 2048x1536 |

#### Ordering Information

Ordering information for the 865240 (MX800) is given here. See the individual Data Sheets for detailed ordering information for the multi-measurement module family, MMS extensions and plug-in modules.

| Basic Functionality                    | MX800 (865240) |
|----------------------------------------|----------------|
| General/ICU Configuration <sup>a</sup> | H10            |
| Neonatal Configuration                 | H20            |
| OR/Anesthesia Configuration            | H30            |
| Cardiac Configuration                  | H40            |
| 8 Real-time Wave Segments              | A08            |
| 12 Real-time Wave Segments             | A12            |

<sup>a</sup> One Hxx option and one Axx must be chosen. If AGM is required, H30 must be ordered.

#### Application Options

| Applications              | 865240 |
|---------------------------|--------|
| <b>Event Surveillance</b> |        |
| Neonatal                  | C04    |
| Standard Capability       | C06    |
| Advanced Capability       | C07    |
| Parameter Histograms      | C09    |

#### iPC Options

| Interfaces                         | 865240 |
|------------------------------------|--------|
| Integrated PC (iPC)                | PC0    |
| 160 GB Hard Disk for integrated PC | HDD    |

#### XDS Connectivity Options

| Interfaces               | 865240 |
|--------------------------|--------|
| XDS Connectivity         | X00    |
| XDS Clinical Workstation | X30    |

#### ProtocolWatch

| Application Options     | 865240 |
|-------------------------|--------|
| Severe Sepsis Screening | P01    |

| Application Options | 865240 |
|---------------------|--------|
| SSC Sepsis Protocol | P02    |

#### Measurement Options

| Measurements                                                                                                                                                                                                                  |                       | Option                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------|
| <b>Measurement Modules</b>                                                                                                                                                                                                    |                       |                                           |
| Multi-Measurement Module, for Resp, ECG (inc. EASI), NBP, SpO <sub>2</sub> (FAST SpO <sub>2</sub> (#A01), Nellcor Oximax-compatible (#A02), Masimo SET (#A03)), and Pressure/Temperature. See the MMS Data Sheet for details. | M3001A                | A01, A02 <sup>a</sup> or A03 <sup>a</sup> |
| Add Press/Temp                                                                                                                                                                                                                |                       | C06                                       |
| Add Press/Temp and Conventional 12 lead ECG                                                                                                                                                                                   |                       | C18                                       |
| X2 Multi-Measurement Module, for Resp, ECG (inc. EASI), NBP, SpO <sub>2</sub> (FAST SpO <sub>2</sub> (#A01), Masimo SET (#A03)), and Pressure/Temperature. See the X2 Data Sheet for details.                                 | M3002A                | A01, or A03 <sup>a</sup>                  |
| <b>MMS Extensions</b>                                                                                                                                                                                                         |                       |                                           |
| Microstream CO <sub>2</sub> Extension                                                                                                                                                                                         | M3015A                |                                           |
| Add Press/Temp                                                                                                                                                                                                                |                       | C06                                       |
| Hemodynamic Extension (with Press, Temp, Press/Temp)                                                                                                                                                                          | M3012A                |                                           |
| Add C.O.                                                                                                                                                                                                                      |                       | C05                                       |
| Add C.O./CCO                                                                                                                                                                                                                  |                       | C10                                       |
| 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>Flexible Module Rack</b>                                                                                                                                                                                                   |                       |                                           |
| Flexible Module Rack (M8048A), for up to eight plug-in modules                                                                                                                                                                |                       |                                           |
| MMS mount (left)                                                                                                                                                                                                              |                       | E20                                       |
| <b>Measurement Modules</b>                                                                                                                                                                                                    |                       |                                           |
| See the individual module Data Sheets for details.                                                                                                                                                                            |                       |                                           |
| Invasive Blood Pressure                                                                                                                                                                                                       | M1006A/B <sup>b</sup> |                                           |
| SO <sub>2</sub>                                                                                                                                                                                                               | M1011A                |                                           |
| Cardiac Output with CCO                                                                                                                                                                                                       | M1012A                |                                           |
| Spirometry                                                                                                                                                                                                                    | M1014A                |                                           |
| Transcutaneous Gases                                                                                                                                                                                                          | M1018A                |                                           |
| SpO <sub>2</sub> (FAST SpO <sub>2</sub> )                                                                                                                                                                                     | M1020B                | A01                                       |

| Measurements                          |        | Option |
|---------------------------------------|--------|--------|
| SpO <sub>2</sub> (Nellcor Compatible) | M1020B | A02    |
| SpO <sub>2</sub> (Masimo SET)         | M1020B | A03    |
| SvO <sub>2</sub>                      | M1021A |        |
| EEG                                   | M1027A |        |
| Temperature                           | M1029A |        |
| VueLink                               | M1032A |        |
| BIS Module                            | M1034A |        |
| Thermal Array Recorder                | M1116B |        |
| IntelliBridge EC10                    | 865115 |        |
| <b>Gas Modules</b>                    |        |        |
| IntelliVue G1                         | M1013A |        |
| IntelliVue G5                         | M1019A |        |
| Anesthetic Gas Module                 | M1026B |        |

a may not be available in all countries.  
b Option #C01 provides an analog output signal

#### Hardware Options

| Hardware Add-Ons              | 865240 |
|-------------------------------|--------|
| Remote Control                | incl.  |
| 8-slot Rack with MMS Mount    | E08    |
| Independent Display Interface | E42    |

#### Interface Options

| Interfaces                              | 865240 |
|-----------------------------------------|--------|
| RS232/MIB Interface <sup>a</sup>        | J13    |
| MSL Interface                           | Incl.  |
| IntelliVue 802.11 Bedside Adapter       | J35    |
| IntelliVue Instrument Telemetry 1.4 GHz | J45    |
| IntelliVue Instrument Telemetry 2.4 GHz | J47    |
| Short Range Radio                       | Incl.  |

a Hardware supports multiple boards of this type.

#### 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  |
| Support Tool                                                                                                                                                                                                    | M3086A       |
| Orderable via InCenter: <a href="http://www3.medical.philips.com/resources/hsg/docs/en-us/custom/intellivue_order.asp">http://www3.medical.philips.com/resources/hsg/docs/en-us/custom/intellivue_order.asp</a> | DVD          |

## Cables

| Length                        | Description                                                          | Product/Option |
|-------------------------------|----------------------------------------------------------------------|----------------|
| <b>MSL Cable</b>              |                                                                      |                |
| 0.75 m                        | Monitor to FMS                                                       | M8022A #SC1    |
| 2 m                           | Monitor to FMS                                                       | M8022A #SC2    |
| 4 m                           | Monitor to FMS                                                       | M8022A #SC4    |
| 10 m                          | Monitor to FMS                                                       | M8022A #SC6    |
| 15 m                          | Monitor to FMS                                                       | M8022A #SC7    |
| 25 m                          | Monitor to FMS                                                       | M8022A #SC9    |
| <b>MIB RS/232 Cables</b>      |                                                                      |                |
| 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    |
| <b>Touch Cables</b>           |                                                                      |                |
| 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   |
| <b>Nurse Call Relay Cable</b> |                                                                      |                |
| 3.0 m                         | standard (backward compatible) nurse paging relay cable <sup>a</sup> | M8022A #NC3    |
| 10.0 m                        | cable                                                                | M8022A #NC6    |
| <b>ECG Out Cable</b>          |                                                                      |                |
| 3.0 m                         | standard ECG out cable <sup>b</sup>                                  | M8022A #SY3    |
| 25 m                          | ECG Sync Extension cable                                             | M8022A #SY9    |

a One end terminated with phone plug; other end w/o connector.

b Both ends terminated with 1/4" 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](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 865303

| Description                             | Option # |
|-----------------------------------------|----------|
| <b>Waves</b>                            |          |
| Upgrade from 8 to 12 waves              | A12      |
| <b>Interfaces</b>                       |          |
| RS232/MIB Interface                     | J13      |
| Flexible Nurse Call Relay               | J30      |
| IntelliVue 802.11 Bedside Adapter       | J35      |
| IntelliVue Instrument Telemetry 1.4 GHz | J45      |
| IntelliVue Instrument Telemetry 2.4 GHz | J47      |
| <b>Clinical Applications</b>            |          |
| Neonatal Event Review                   | C04      |
| Basic Event Surveillance                | C06      |
| Advanced Event Surveillance             | C07      |
| Parameter Histograms                    | C09      |
| <b>Hardware Add-On</b>                  |          |
| Independent Display Interface           | E42      |
| <b>Protocol Watch</b>                   |          |
| Severe Sepsis Screening                 | P01      |
| SSC Sepsis Protocol                     | P02      |
| <b>XDS External Display Solution</b>    |          |
| XDS Connectivity                        | X00      |
| XDS Clinical Workstation                | X30      |
| <b>Software</b>                         |          |
| Upgrade to current SW Revision          | SU0      |

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M3001A complies with the requirements of  
the Council Directive 93/42/EEC of 14 June  
1993 (Medical Device Directive).

Please visit [www.philips.com/](http://www.philips.com/)



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