

Philips IntelliVue Telemetry System with Smart-hopping Technology

FEATURES

- Three transceiver models are available - the M4841A TRx ECG-only (compact size), the M4841A TRx+ with integrated ECG and FAST-SpO₂ (standard size), and the ECG-only (standard size upgradeable with SpO₂ capability).
- Philips IntelliVue Wireless Network Devices:
 - Philips IntelliVue Access Point
 - Philips Access Point Controller
 - Philips Sync Unit
 - Remote Power Supply
 - Uninterruptable Power Supply
- Philips IntelliVue Telemetry System with Smart-hopping Technology supports full mobility of ambulatory patients within a wide coverage area via a cellular wireless connection using a wireless protocol based on Digital Enhanced Cordless Telecommunications (DECT) over the Philips IntelliVue Wireless Network.
- Philips IntelliVue Telemetry System offers bi-directional data flow of control and device information. The transceiver sends patient data, and sends and receives control and device information to and from the IntelliVue Information Center (bi-directional communication).
- Philips IntelliVue Telemetry System can handle up to 128 patients.
- Interchangeable radio modules allow operation in the FCC allocated/protected WMTS RF spectrum 1395-1400 MHz and 1427-1432 MHz frequency bands (for operation in USA only).
- Upgrades available to existing Philips Telemetry System installations at the customer site requiring minimal disruption to the clinician.
- Smart-Hopping technology dodges interference and locates the strongest available signal wherever the patient roams. Dynamic wireless channel allocation ensures best use of available wireless spectrum.



PHILIPS

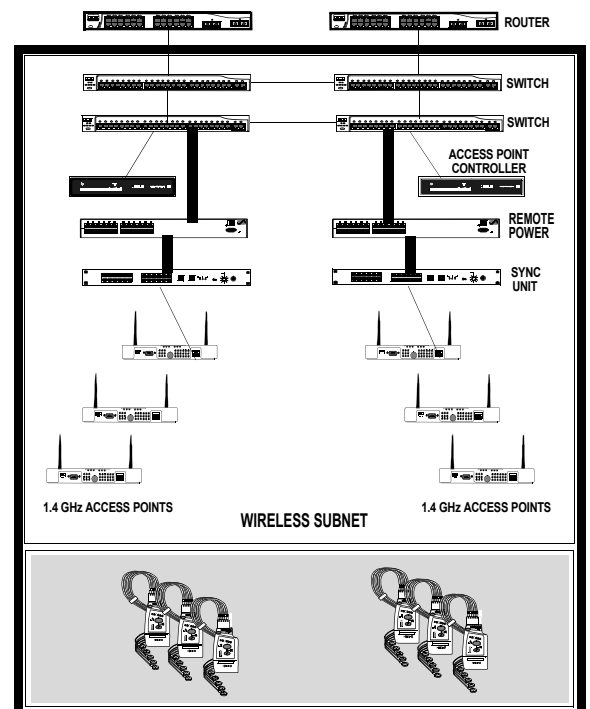


FEATURES (CONTINUED)

- Improved motion tolerance pulse oximetry using Philips FAST- SpO₂ algorithm (Fourier Artifact Suppression Technology). User-defined SpO₂ measurement modes based on patient acuity: Spot Check SpO₂ or continuous SpO₂.
- Clinical user selected Standard ECG with two V-Leads or EASI™ derived 12-lead monitoring in the same device, at the bedside.
- EASI™* derived 12-lead ECG technology requiring only 5 electrodes is well suited for ambulatory patients.
- ECG lead selection, ECG size control, SpO₂ alarm limits, and heart rate alarm limits can be controlled from the IntelliVue Information Center.
- Standard ECG lead selection at the IntelliVue Information Center provides Leads I, II, III, aVL, aVR, aVF, V₁, and MCL.
- Uses the same ECG 3-, 5- and 6-lead ECG Leadsets and SpO₂ sensors as the Philips IntelliVue Patient Monitors for easier patient transitions.

* EASI derived 12-lead ECG's and their measurements are approximations to conventional 12-lead ECG's. 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 interpretations.

- Colored (AAMI) 5-wire and 6-wire patient cable sets make for easy identification of electrode connections.
- Transmits 1 to 4 ECG waves, with the ability to view multiple leads at the IntelliVue Information Center.
- Telemetry Overview functionality works in existing Overview environment (with IntelliVue Information Center, Revision F, or later).
- Display of technical alarm messages (INOPs) at the IntelliVue Information Center.
- Visual indicators and audible tones for local status information at the transceiver.
- Check Button initiates transceiver self-check-automatic at turn on.
- Transceiver uses two AA alkaline batteries.
- Graduated battery gauge on the transceiver.
- Operator initiated Audio Informational Alerts - Find Device - for locating the transceiver.
- Service configuration tools enable field engineers to fine-tune and configure each transceiver.
- Fast/easy software upgrades to each transceiver.



TYPICAL PHILIPS INTELLIVUE TELEMETRY SYSTEM

DESCRIPTION

The Philips IntelliVue Telemetry System uses a cellular architecture to provide two-way communications between patient-worn transceivers and the IntelliVue Information Center.

The Philips IntelliVue Telemetry System consists of two types of transceivers (portable patient-worn devices) - one with integrated ECG & SpO₂ named TRx+, and another compact size with ECG - only capability named TRx, and components that make up the Philips IntelliVue Wireless Network. The pocket-size transceiver sends patient data, and sends and receives control and device information to and from the IntelliVue Information Center (bi-directional communication) for subsequent monitoring, display, analysis, alarm detection, operator alerts, data storage and permanent recording. Displays, settings, recordings, and alarms are controlled from the IntelliVue Information Center. Recordings can also be initiated from the transceivers.

The IntelliVue transceiver sends the patient's digitized ECG/SpO₂ signals (via a cellular wireless connection using a modified version of Digital Enhanced Cordless Telecommunications (DECT) system) to the IntelliVue Information Center which displays monitoring-quality ECG waveforms, heart rate, and SpO₂ values; detects and analyzes the ECG for cardiac arrhythmias; and displays alarm conditions and INOPs. A full line of ECG Leadset, electrodes, SpO₂ sensors, and accessories are available. Many are compatible with IntelliVue patient monitors).

The transceivers support the following (AAMI) cables:

- A 3-wire set for single-lead operation and display.
- A 5-wire set which enables the clinician to select two of the following leads for analysis and display at the central station: (I, II, III, aVL, aVR, aVF, V₁, and MCL).
- A 6-wire set which uses the same four limb leads as 5-lead standard placement, and two precordial leads: (I, II, III, aVL, aVR, aVF, V₁-V₉, V_{3R}, V_{4R}, V_{5R}).

Pace pulse detection is included, and ECG monitoring filtering (0.5 - 40 Hz) is used to reduce artifact that may detract from waveform quality and cause false alarms. When ST/AR ST segment monitoring is active, the filter is changed (0.05 - 40 Hz) to allow accurate measurement of the ST segment. Gain adjustment is provided at the central station, enabling the user to control the size of the ECG signal being viewed or recorded.

If a technical alarm (INOP) condition occurs in multi-lead configurations, the system can be configured for fallback mode. In this mode the system automatically switches from the inoperative lead to a secondary lead if available. When this happens, an audible INOP alarm sounds at the central station.

EASI™* - Switchable from Standard to EASI Modes on same TRx+ device. Both TRx models support 12-lead ECG analysis using the EASI derivations from a 5-wire lead set. The EASI overlay displays a chest diagram with the LEDs in EASI lead positions. The overlay color uniquely distinguishes EASI from conventional ECG monitoring.

Tools are available to configure parameters and to upgrade software on the transceivers, and to read/view performance statistics and status of the Philips IntelliVue Wireless Network components for help in troubleshooting.

M4841A ECG/SPO₂ & ECG-ONLY



Two transceivers are available for use with the Philips IntelliVue Telemetry System - one with integrated ECG & SpO₂ monitoring capability, and another compact model with ECG-only.

Each transceiver model provides bi-directional communication with the Philips IntelliVue Information Center (geographical availability limited by licensing considerations).

Operation in the FCC allocated/protected Wireless Medical Telemetry Service (WMTS) radio bands 1395-1400 MHz and 1427- 1432 MHz frequency bands (Operation in USA only).

Transceivers use two AA alkaline disposable batteries. A battery gauge on the case (also at central station) lights up to indicate battery strength (Full, Weak/Replace), and technical alarm conditions for Weak or Replace levels are sent to the central station. Auto shut-off feature stops broadcasting rf signals if there is no ECG for 10 minutes - with transmitter off message at central station. The robust transceivers are designed to withstand occasional dropping on floors and brief submersion in water. To avoid inadvertent power off during monitoring, the transceivers have no on/off switch.

The M4841A TRx and TRx+ transceivers feature:

- Configurable Audible Volume Levels for local status information (or mute configuration).
- Clinical operator-initiated Audible Page/Find Device alerts for locating the device (initiated from the IntelliVue Information Center).

- Patient/clinical operator-initiated Multifunction Telemetry Button (configurable) allows for Nurse Call, Remote Recordings, both or neither. Also controls Alarm Pause/Suspend when pressed along with the Check Button.
- 3-Minute Alarms Pause/Suspend and Indicator - clinical operator-initiated at transceivers or central station. Resume monitoring from Standby.
- Out-of-Range audible alert.
- Check button to confirm the battery status, Lead-set in use (3, 5, or 6), and EASI mode.
- Vivid electrode placement diagrams (AAMI or IEC) on the transceiver case (EASI, Standard, MCL, and V-Leads).
- Leads-Off indicators for standard and EASI placement with INOP messages at the IntelliVue Information Center. Indicates leads attached upon lead insertion.
- FAST-SpO₂ (Fourier Artifact Suppression Technology) continually monitored or Spot Check with sensor LED indicator and transceiver information tone to indicate reliable measurement completed.

PHILIPS INTELLIVUE WIRELESS NETWORK

The key function of the Philips IntelliVue Wireless Network is to transport data from the transceivers over a common wireless LAN-based infrastructure (part of the IntelliVue Clinical Network) to/from the IntelliVue Information Center where the data can be recorded or used to alert clinical operators as to a change in monitored parameters.

The transceiver contains a bi-directional (full duplex) cellular wireless transceiver that takes data from its monitoring inputs and transports this data over the air to cell-based IntelliVue Access Points (AP). The data transport mechanism between the transceivers and the IntelliVue Access Points is a cellular wireless connection using a modified version of the Digital Enhanced Cordless Telecommunications (DECT) system.

Smart-Hopping technology provides dynamic management of the RF spectrum utilization for each transceiver. This feature allows a large number of simultaneously operating transceivers within the IntelliVue Telemetry System.

The Philips IntelliVue Wireless Network is an Ethernet LAN which can include LAN switches and routers, and is used to interconnect multiple IntelliVue Access Points to one or more Philips Access Point Controllers (APC). The APC(s) connects to a switch in the IntelliVue Clinical Network and on to the IntelliVue Information Center along with other central equipment via the same LAN. Within the Philips IntelliVue Wireless Network there is a Remote Power Supply which provides dc power to the IntelliVue Access Points via the Philips Sync Unit. The Sync Unit (SU) distributes the common reference clock signal needed to synchronize all the APs used in the system.

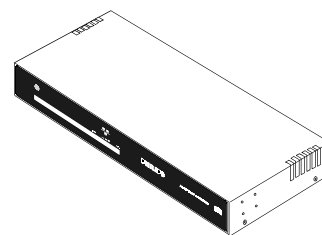
The Philips IntelliVue Wireless Network has devices and components that shall be powered from an uninterruptable power source (UPS) to protect against hospital generator changeover interruptions and short power line transients.

Philips IntelliVue Access Point (AP)



The Philips IntelliVue Access Points (AP) used in the Philips IntelliVue Wireless Network act as transceivers that transmit and receive data between both TRx and TRx+ transceivers and the Philips IntelliVue Information Center via the Philips IntelliVue Wireless Network. The effective range of each AP is typically 32 feet, and each AP supports up to 16 transceivers. When monitored patients are ambulatory, patient data is handled seamlessly between the other IntelliVue Access Points in the system (alarm indication is provided when data loss limits are exceeded). The AP is normally used with two antennas attached to it. APs can be mounted out of the way on corridor walls or above and below ceiling tiles.

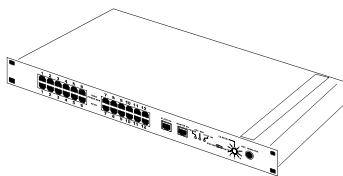
Philips Access Point Controller



The multifunctional Philips Access Point Controller (APC) controls the data flow of both TRx and TRx+ transceivers as the patients move about the coverage area between the IntelliVue Access Points. It also can be used to configure parameters of the transceivers - all via a Graphical User Interface (GUI).

The APC provides System Alerts such as loss of synchronization, high data loss, and over capacity. It can be rack mounted or placed freestanding on a flat surface.

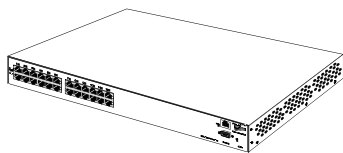
Philips Sync Unit



The Philips Sync Unit (SU) provides a necessary common clock signal to synchronize all the IntelliVue Access Points in the system. As patients ambulate around the hospital coverage area their transmitted data are handed over from one AP to another seamlessly without interruption or data loss.

The Sync Unit can be rack mounted or placed freestanding on a flat surface.

Remote Power Supply



The Remote Power Supply is a 6- or 12-port Ethernet channel power feeding device that provides dc power to all of the IntelliVue Access Points, and also provides the operating power to the Sync Units, all via 100-Base-TX Ethernet LAN cabling.

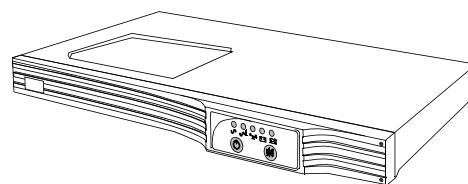
It can be rack mounted or placed free standing on a flat surface.

Philips IntelliVue Wireless Network - Components:

- Philips IntelliVue Access Point (AP)
- Philips Access Point Controller (APC)
- Philips Sync Unit (SU)
- Remote Power Supply
- Uninterruptable Power Supply (UPS)

Refer to the M3185 IntelliVue Clinical Network Technical Data Sheet for individual component ordering information and specifications

Uninterruptable Power Supply (UPS)



The Philips IntelliVue Wireless Network has several components that shall be powered from a UPS (devices and components connected to a UPS include the APC, the Remote Power Supply (6-port or 12-port), the Sync Unit, and Switches and Routers). The UPS supplies backup power to protect against hospital generator change over interruptions, and short power line transients.

Industry Standard Network Components used in the Philips IntelliVue Wireless Network

- High/Low Density Switches and Routers
- Media Converter or Translator
- Category 5 UTP Plenum Cable
- RJ-45 TP Patch Cable
- RJ-45 UTP Crossover Patch Cable
- Fiber Optic Patch Cable
- 24-Port Patch Panel Kit
- Patch Panel Wall Mount Kit
- UTP Communication Outlet Kit
- Dual Port UTP Surface Mount Kit
- Quad Port UTP Wall Box Kit
- Quad Port UTP Surface Mount Kit
- Single Port UTP Wall Box Kit

ORDERING INFORMATION

M4840A Philips IntelliVue Telemetry System - Devices, Components and Accessories

Philips Product Number	Description
	M4840A Philips IntelliVue Telemetry System
<u>862439</u>	<u>M4841A Philips IntelliVue TRx and TRx+ Transceivers:</u>
S01	M4841A TRx Transceiver (ECG - Only, compact size).
S02	M4841A TRx+ Transceiver (ECG & SpO ₂ standard size).
S03	M4841A TRx+ Transceiver (ECG - Only, standard size, Upgradeable to include SpO ₂ capability).
	<u>ECG Leadsets & Accessories for M4840A Philips IntelliVue Telemetry System:</u> Note: Leadsets are Compatible with IntelliVue Patient Monitors
K01	AAMI Telemetry Leadset, Gray Leadwires 3-Wire Snap, 76cm (30")
K07	AAMI Telemetry Leadset, Gray Leadwires 5-Wire Snap, 76cm (30")
K09	AAMI Telemetry Leadset, Colored Leadwires 5-Wire Snap, 76cm (30")
K11	AAMI Telemetry Leadset, Gray Leadwires 6-Wire Snap, 76cm (30")
K13	AAMI Telemetry Leadset, Colored Leadwires 6-Wire Snap, 76cm (30")
K02	AAMI Telemetry Leadset, Gray Leadwires 3-Wire Grabber, 76cm (30")
K08	AAMI Telemetry Leadset, Gray Leadwires 5-Wire Grabber, 76cm (30")
K10	AAMI Telemetry Leadset, Colored Leadwires 5-Wire Grabber, 76cm (30")
K12	AAMI Telemetry Leadset, Gray Leadwires 6-Wire Grabber, 76cm (30")
K14	AAMI Telemetry Leadset, Colored Leadwires 6-Wire Grabber, 76cm (30")
K35	No Telemetry Leadsets To Be Supplied
K20	M2636C TeleMon/Transceiver Tether Interface Cable Complete
D01	Provide Printed Copy of Instructions for Use
<u>M1949A</u>	10-Lead Trunk Cable
<u>862439</u>	<u>SpO₂ Sensors:</u>
K50	Philips Adult Finger SpO ₂ Sensor (M1191A)
K51	Philips Adult Ear Clip SpO ₂ Sensor (M1194A)
K52	Philips Adult Small SpO ₂ Sensor (M1192A)
K55	No SpO ₂ Sensors To Be Ordered
<u>862160</u>	<u>M4841A Transceiver Upgrades:</u>
A01	Upgrades M4841A TRx+ Transceiver (ECG - Only standard size) to include SpO ₂ Capability

Philips Product Number	Description
	<u>Supplies & Accessories for M4840A Philips IntelliVue Telemetry System:</u>
989803137831	Transceiver Pouch (50 Box) with Shoulder Strap (fits both compact & standard Transceivers)
989803140371	Transceiver Pouch (Case 200) with Shoulder Strap (fits both compact & standard Transceivers)
989803140401	Single ECG Alignment Guide /Protective Insert, untethered (Package of 10)
989803140411	Single ECG Alignment Guide/Protective Insert, tethered (Package of 10)
989803140421	Double ECG Alignment Guide/Protective Insert, untethered (Package of 10)
989803140431	TeleMon/Service Port Protective Cover for TRx ECG Only model (Package of 10)
989803140451	TeleMon/Service Port Protective Cover for TRx+ ECG/SpO ₂ model (Package of 10)
989803140441	SpO ₂ Connector Protective Cover (Package of 10)

SPECIFICATIONS

M4841A Transceivers - TRx ECG Only and TRx+ ECG & SpO₂

Specification	Value
Physical Characteristics:	
ECG & SpO₂ Model M4841A TRx+:	
Dimensions at widest point (HxWxD):	140 x 88 x 37 mm (5.6H x 3.52W x 1.48D in)
Volume:	300 cm ³
Weight (ECG + SpO ₂):	<324g (11.5 oz.) with 5-Wire Leadset and 2 AA batteries
	<255g (9.0 oz.) with 2 AA batteries
	<204g (7.2 oz.) without 2 AA batteries
ECG - Only Model M4841A TRx:	
Dimensions at widest point (HxWxD):	140 x 75 x 28.5 mm (5.6H x 3.0W x 1.14D in)
Volume:	215 cm ³
Weight (ECG Only):	<284g (10 oz.) with 3-Wire Leadset and 2 AA batteries
	<210g (7.4 oz.) with 2 AA batteries
	<162g (5.7 oz.) without 2 AA batteries
Environmental Characteristics:	
Operating Temperature:	0° C to +37° C (32° F to 99° F) Note: SpO ₂ sensors have a maximum operating temperature of 37° C (99° F). See sensor product specifications for more detail.
Operating Humidity:	≤95% RH @ 40° C (104° F) non-condensing
Storage Temperature (without batteries):	-40° C to +60° C (-40° F to +140° F)
Storage Humidity:	≤90% RH non-condensing @ 60° C (140° F)
Altitude:	Operating and storage up to 3048 meters (10,000 feet)
Shock Resistance:	Withstands 1.2 meter (4 foot) drop to vinyl covered concrete surface with only cosmetic damage.
Water Resistance:	Withstands 5- minute submersion in 30.5 cm (1 foot) of water, Withstands 10-minute water exposure in a shower when used in conjunction with a closed pouch.
Cross-infection Prevention:	Transmitter can be sterilized with Ethylene Oxide (EO) to cross infection assurance level 10E-6.
Electrical Characteristics:	
Batteries:	Uses two 1.5V AA Alkaline Batteries (tested with DURACELL MN1500 batteries - see Battery Life Expectancy specifications)
M4841A Radio Module Specifications - Transmitter:	
Frequency Ranges:	Channel Frequencies in the Band 1395 to 1400 MHz and 1427 - 1432 MHz. Channel Spacing: 1.6 MHz
RF Output Power:	8 dBm +2/-3dB (3.2 mW to 10 mW, 6.3 mW nominal) into antenna load @ nominal battery voltage

Specification	Value
RF Output Power Control:	- Power control algorithm deployed to prevent excess power and also includes temperature compensation.
RF Max power limit:	< 10 dBm normal operation
Transceiver Frequency Accuracy During Normal Operation:	±15kHz Relative to Channel Frequency, includes temperature compensation and aging effects.
Reference Frequency calibration:	< 4ppm
Modulation Type:	FSK with Root Raised Cosine Filtering (1M60Q7D)
Modulation Deviation:	Bit 1: + 288kHz +/- 25kHz relative to channel frequency Bit 0: - 288kHz +/- 25kHz relative to channel frequency
Out of Band Spurious Emission Levels: ≤ 1394MHz, ≥ 1401MHz ≤ 1428MHz, ≥ 1433MHz	< -41dBm in 1MHz band, outside channel in use
M4841A Radio Module Specifications - Receiver:	
RF Sensitivity @ 10 ⁻³ BER	-84 dBm nominal (M4841A) -87 dBm nominal (Access Point)
Receiver Dynamic Range	-27 dBm to -91 dBm
Adjacent Channel Rejection (Receiver Selectivity)	1st Adjacent Channel: > 12 dB 2nd Adjacent Channel: > 48 dB
RSSI Algorithm	Operates over Receiver Dynamic Range -80dBm to -20 dBm

Battery Life Specifications

Battery Type

Equipment	Specification
Battery Type	2 fresh AA disposable alkaline batteries

Note— **Battery Life** - The battery life specifications listed below are based on Duracell MN 1500 batteries. Battery life for other brands may differ.

Operating Mode	Battery Life	Current Draw
ECG Only	50 hours	51.3mA @ 2.4V
ECG/SpO ₂ Continuous	18.8 hours	117mA @ 2.4V
ECG/SpO ₂ Spot Check	between 18.8 hours and 50 hours, depending on usage rate	

ECG Measurement Specifications for All Models:

Specification	Value																								
ECG Channel Transmitted Leads: 3 Electrodes (All Models) 5 Electrodes Standard (All Models) 5 Electrodes EASI (All Models) 6 Electrodes	<table border="1"> <thead> <tr> <th><u>Channel # 1</u></th> <th><u>Channel # 2</u></th> <th><u>Channel # 3</u></th> <th><u>Channel # 4</u></th> </tr> </thead> <tbody> <tr> <td>I, II, or III</td> <td></td> <td></td> <td></td> </tr> <tr> <td>II</td> <td>III</td> <td>MCL or Va</td> <td></td> </tr> <tr> <td>Va-i</td> <td>Va-s</td> <td>Ve-s</td> <td></td> </tr> <tr> <td>II</td> <td>III</td> <td>Va</td> <td>Vb</td> </tr> </tbody> </table>	<u>Channel # 1</u>	<u>Channel # 2</u>	<u>Channel # 3</u>	<u>Channel # 4</u>	I, II, or III				II	III	MCL or Va		Va-i	Va-s	Ve-s		II	III	Va	Vb				
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Resolution:	5 μ V																								
ECG Input:	Differential, defibrillator protected against a delivered energy of up to 360 joules into a 100 ohm load.																								
Input Impedance:	>5 M Ohms (@10 Hz)																								
Input Dynamic Range:	\pm 9 mV																								
DC Offset Range:	\pm 320 mV																								
Common Mode Rejection Ratio:	\geq 90 dB @ 50, 60Hz (differential input)																								
Bandwidths \pm 3dB:	ST Monitoring: 0.05 to 40 Hz																								
Gain Accuracy	\pm 5% at 25 $^{\circ}$ C (77 $^{\circ}$ F)																								
Noise Referred to ECG Input:	30 μ V peak-to-peak typical referred to input, with each ECG lead connected to the same point through a 51 kohm resistor in parallel with a .047 μ F capacitor.																								
Lead Wires:	3, 5, or 6-wire set. 5-Lead compatible with IntelliVue Patient Monitors, AAMI																								
Time to Baseline from Defibrillation:	5 seconds max																								
Pacer Rejection Performance (Pace Pulses with no tails)	<table border="1"> <thead> <tr> <th><u>Positive Pace Pulses:</u></th> <th><u>Amplitude</u></th> <th><u>Width</u></th> </tr> </thead> <tbody> <tr> <td></td> <td>+2 to +700 mV</td> <td>0.1, 0.2, 0.5, 1.0 ms</td> </tr> <tr> <td></td> <td>+2 to +500 mV</td> <td>1.5 ms</td> </tr> <tr> <td></td> <td>+2 to +400 mV</td> <td>2 ms</td> </tr> <tr> <th><u>Negative Pace Pulses:</u></th> <th><u>Amplitude</u></th> <th><u>Width</u></th> </tr> <tr> <td></td> <td>-2 to -700 mV</td> <td>0.1, 0.2, 0.5, 1.0, ms</td> </tr> <tr> <td></td> <td>-2 to -500 mV</td> <td>1.5 ms</td> </tr> <tr> <td></td> <td>-2 to -400 mV</td> <td>2.0 ms</td> </tr> </tbody> </table>	<u>Positive Pace Pulses:</u>	<u>Amplitude</u>	<u>Width</u>		+2 to +700 mV	0.1, 0.2, 0.5, 1.0 ms		+2 to +500 mV	1.5 ms		+2 to +400 mV	2 ms	<u>Negative Pace Pulses:</u>	<u>Amplitude</u>	<u>Width</u>		-2 to -700 mV	0.1, 0.2, 0.5, 1.0, ms		-2 to -500 mV	1.5 ms		-2 to -400 mV	2.0 ms
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EMC Performance Limits, radiated immunity	Meets Essential Performance, but may observe some waveform dropout over 181 to 202 MHz @ > 1.8 V/m and 203 to 213 MHz @ > 1.0 V/m																								

SpO₂ Measurement Specifications for All Models:

Measurement	Specification
SpO ₂ Measurement Range: (Calibration and Display)	0-100%
SpO ₂ Resolution:	1 %
SpO ₂ Accuracy:	With Philips re-usable sensors (M1191A, M1192A) 70 -100% ± 2% (1 standard deviation) With Philips re-usable sensor (M1194A:) 70 - 100 ±4% (1 standard deviation) With NELLCOR Oxisensor sensors D-25 & D-20: 70 - 100% ±3%
SpO ₂ Numerics - Averaging:	10 seconds
SpO ₂ & Pulse Numerics - Update Rate:	Transmitted once per second
Pleth Wave - Sampling Rate:	125 sps
INOP Technical Alarms:	Triggered if the sensor is disconnected, if a pulse is not detected, if the signal is noisy, if light interference is detected, if sensor is defective, if the measurements are erratic, or if the module is malfunctioning.
Pulse Rate Measurement: (available only with Continuous SpO ₂)	Range: 30-300 bpm Accuracy: ± 2% Resolution: 1 bpm
Display of SpO ₂ Numerics:	SpO ₂ Data values will be displayed as xxx % SpO ₂ to meet ISO/EN Standard EN 865
NIBP INOP Suppression Feature:	If enabled via M4841A, detection of an NIBP measurement on the same limb and the corresponding suppression of SpO ₂ INOPs (for max 60 seconds)

Regulatory Compliance

The device is intended to provide ambulatory and bedside monitoring of ECG and SpO₂ parameters of adult and pediatric patients in a professional health care facility. It is intended to be used by trained health care personnel. It is not intended for home use.

The M4841A TRx and TRx+ Transceivers are certified to UL 60601-1 and IEC 60601-1.

The M4840A/M4841A Philips IntelliVue Telemetry System has 510(k) clearance in the USA.

The M4840A/M4841A Philips IntelliVue Telemetry System complies with FCC Parts 15 and 95, as applicable.

In the USA, Federal law restricts this system to sale on the order of a physician.

Philips IntelliVue Telemetry System- System Security

Security of the system is based on Philips IntelliVue Telemetry System not sending anything that identifies the patient across the air interface. Encoded IDs are the only identifiers sent across the air for the TRx and TRx+ transceivers. This scheme complies with HIPAA requirements.

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