

The Future in MRI Patient Monitoring



MRI ROOM POSITIONING

Patient Interface:	5,000 Gauss (0.5 T) field line
Display Controller Unit:	5,000 Gauss (0.5 T) field line
Display Controller Unit with recorder	1,000 Gauss (0.1T) field line

COMPATIBILITY

0.15 to 3.0 Tesla MRI Systems

DISPLAY

Screen Size:	12 inches (30.48 cm) diagonal
Screen Type:	Active Color LCD
Resolution:	800 x 600 pixels

WAVEFORMS & NUMERICS

Number of Channels:	6 with associated numerics
Numerics:	8 seconds by parameter, showing real time values, units, alarm limits & other relevant information
Display layout:	User configurable, 7 customized layouts can be permanently stored
Waveform Display Height:	>= 21 mm
Numeric Character Height:	Up to 25mm
Sweep Speed:	25 or 50mm/s for ECG, SpO ₂ , IBP
Waveform Length:	Approx. 6.7 sec at 25mm/sec

TRENDS

Graphical Trends:	All monitored parameters
Time Viewing:	20 min, 2, 4, 8, 24 hours
Trend Cursor:	Time scale zooming
Tabular Trends:	NIBP, HR, SpO ₂ , CO ₂ , Resp
Documentation:	Integrated dual channel recorder

CARDIAC AND PERIPHERAL GATING

Interfaces for GE, Hitachi, Philips, Siemens, and Toshiba

Method:	Digital or Analog
Delay:	< 10 milliseconds

ALARMS

Alarm Types:	Medical and technical
Alarm Actions:	Audible and visual alarms, configurable automatic recorder printouts
Audible Alarms:	Tones and bleeps, adjustable volume
Visual Alarms:	Flashing red numeric, red waveform, text message for technical alarms
Alarm Mode:	Fixed and flexible
Alarm Silence Period:	120 second audible silence with visual alarm indication

SYSTEM DATA OUTPUTS

Digital Output:	RS232 Compatible Serial COM Port
Analog Output:	All Waveforms Available
Video:	Standard VGA Port

VITAL SIGN PARAMETERS

ECG (Two Leads), Heart Rate, SpO₂, NIBP, IBP, Temperature, Anesthetic Agents, O₂, EtCO₂, N₂O

ECG

2.4 GHz Wireless Communication with Patient Interface Unit	
Heart Rate Range:	30-300 BPM
Two ECG Leads Simultaneous	
Lead Selection:	I, II, III, aVL, aVF, aVR
Measurement Accuracy:	±0.5% of display, ± 1 BPM
Display Resolution:	1 BPM
Bandwidth:	0.5 to 40 Hz
MRI Gradient Filtering:	Monitor Mode: Digital Signal Processing (DSP)
	MRI: Adaptive Filter DSP
	Cardiac: CVMRI gradient with Adaptive Filter
	3.0T: T-wave suppression for high field MRI
Sensitivity:	Adult >200mV Neonatal >100 mV
Isolation:	Meets IEC 601-1 and UL 544 standards
Input:	ECG via 4 lead patient cable
Defibrillation Protection:	Up to 360 J, at 5 kV, recovery within 1 second
Patient Leakage Current:	<10 mA
R-wave indicator	Audible tone and flashing heart

ECG ALARMS

Alarm Limit Range:	30 to 249 BPM
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PULSE OXIMETRY

2.4 GHz Wireless Communication with Patient Interface Unit	
Measurement Range:	0 to 100%
Measurement Type:	Red & Infrared light absorption
Sensors:	Reusable and Semi-disposable
Accuracy:	100 to 70% ± 3.0% 69 to 0% unspecified

PULSE OXIMETRY ALARMS

Alarm Limit Range 50 to 99%

NON-INVASIVE BLOOD PRESSURE

Display Ranges: 0 to 260 mmHg
Cuff Sizes: Neonatal, Infant, Pediatric, Adult,
Large Adult, Adult Thigh
Pulse Rate Range: 40 to 230 BPM
Initial Inflation Pressure: Adult: 170 ± 5 mmHg
Neonate: 0 to 120 ± 5 mmHg
Operating Modes: Automatic, Manual, Stat
Cycle Times: Preset intervals, from 1 minute to 4 hour
Overpressure Protection: Adult at >285 mmHg
Neo at >142 mmHg

NON-INVASIVE BLOOD PRESSURE ALARMS

Alarm Limit Range: 5 to 249 mmHg

INVASIVE BLOOD PRESSURE

Number of Channels: 2 channels
Measuring Range: -10 to 250 mmHg
Accuracy: ±0.5% of reading, or 1 mmHg
(whichever is greater)
Frequency Response: 0 to 12 Hz
Isolation: Meets IEC 601-1 and UL 544 standards
Zero Adjust: Zeroes with 300 mmHg offset to
0 ± 1 mmHg within 1 second
5uV/V/mmHg
Transducer Requirement:
Digital Pressure Display: Systolic, diastolic and mean

INVASIVE BLOOD PRESSURE ALARMS

Alarm Limit Range: -10 to 249mmHg

LOW FLOW END-TIDAL CO₂

Measurement Technique: Side Stream
Measurement Range: CO₂; 0 to 76 mmHg (0 to 10 kPa)
Respiration: 4 to 100 Resp/min
Flow Rate: 80mL/min
Accuracy: CO₂; ±4 mmHg (0.5 kPa) or ±12%
(whichever is greater)
Respiration: ±1 Resp/minute
Warm Up Time: < 2 minutes
Display Update Interval: Waveform breath by breath
Calibration: No calibration required

EtCO₂ ALARMS

Alarm Limit Range: CO₂; 5 to 80 mmHg (0.7 to 10.6 kPa)
Respiration: 4 to 150 Resp/min

ANESTHETIC AGENTS

Measurement Technique: Side Stream
Measurement Method: Automatic 5 Anesthetic Agent Identification
Non-dispersive Infrared Absorption Technique
Display Update Interval: Waveform breath by breath
Calibration: No calibration required
Flow Rate: 230mL/min
Measurement Range:

Halothane	0.15 to 8.5 Vol.%
Enflurane	Identification. No measurement
Isoflurane	0.15 to 8.5 Vol.%
Sevoflurane	0.15 to 10 Vol.%
Desflurane	0.15 to 22 Vol.%
Carbon Dioxide	0 to 10 Vol.%
Nitrous Oxide	0 to 99 Vol.%
Oxygen	0 to 100%

ANESTHETIC AGENTS (continued)

Accuracy:

5 Agents	±0.15 Vol.% + 15% relative
CO ₂	±4mmHg (0.5 kPa) or 12% relative (whichever is greater)
N ₂ O	±2% Vol. + 8% relative
O ₂	±3%, Full Scale

ANESTHETIC AGENT ALARMS

Alarm Limit Range 5 Anesthetic Agents 0.1 to 18.0%

FIBETEMP TEMPERATURE

Channel: One
Scales: Celsius or Fahrenheit
Range: 20.0° to 44.0° C (68.0° to 111.2° F)
Accuracy: ±5° C (0.9° F)

TEMPERATURE ALARMS

Alarms Limit Range: 20.0° to 44.0° C (68.0° to 111.2° F)

DUAL CHANNEL RECORDER

Record Options: Real Time / Delayed Waveforms, Tabular
Trends, Stored Events, Auto on Alarms,
Auto on Interval
Waveform Printout: User Selectable Channel 1 and 2
Numerics Printout: HR, SpO₂, NIBP, P1-P2, EtCO₂, and N₂O
Tabular Trend Printout: HR, NIBP, SpO₂, CO₂
Paper Speed: 25 or 50 mm/sec
Paper Width: 40mm (2 inches)
Operating Principle: Thermal Array
Print Resolution: Vertical: 8 dots/mm
Horizontal: 32 dots/mm at 25 mm/sec

USER INTERFACE

Input Devices: 15 labeled hard keys for most frequent
functions, Windows-like pop-up display
menus, Control knob maneuvering
Configurability: 7 user-customized setups can be stored

BATTERY OPERATION

Battery Type: Lithium-ion
Capacity: 8 hours on a full charge
Charging time: < 12 hours
Battery Capacity Monitoring: Intelligent with Comprehensive Display
Low Battery Warning Alarms: Audible and visual alert

SAFETY

Designed to meet: UL 60601-1, CSA C22.2 No. 601.1-M90

PHYSICAL CHARACTERISTICS

Patient Interface Caster Mount

Height: 44.8 in. (114 cm)
Width: 17.5 in. (44.5 cm)
Depth: 17.5 in. (44.5 cm)
Weight: 67 lbs. (30.4 kg)

Display Controller Unit

Height: 12.4 in. (31.5 cm)
Width: 15.9 in. (40 cm)
Depth: 6.2 in. (15.8 cm)
Weight: 19.4 lbs. (8.8 kg)

ENVIRONMENTAL

Power Requirements: 100-240 VAC
Max Power Consumption: < 100 Watts
Operating Temperature: + 10° to 44° C (50° to 111° F)
Storage Temperature: -40° to +75° C [-40° to +167° F]
Relative Humidity: 0 to 80% non-condensing

