GE Healthcare

MAC 5500

Resting ECG analysis system

Built on GE's proven innovation in ECG acquisition and analysis, the MAC® 5500 is GE's premier ECG system, delivering advanced disease management capabilities through its industry-leading collection of standards-setting algorithms and advanced networking.

The MAC 5500 system offers the sophistication required for advanced ECG applications, while its ease of use extends this level of performance to the broadest range of users possible. And, it's part of the complete GE suite of networked, non-invasive testing solutions designed to maximize patient throughput and department productivity.

- Advanced algorithms set the standard in ECG analysis and interpretation.

- Easy-to-use applications and features streamline productivity and workflow.

- Seamless connectivity to the MUSE® cardiology information system speeds data storage and ECG retrieval.

- Comprehensive training helps maximize your return on investment.

Setting the mark for clinical validity and excellence in ECG analysis.

GE Healthcare has steadily expanded its electrocardiograph-based suite of ECG analysis programs and capabilities through diligent research and development.

- **Regular clinical input from the world's top consulting cardiologists and physicians** helps our own research and development engineers enhance our programs.

- **Ongoing acquisition of clinically correlated, "gold-standard" databases** allow us to continually evaluate and verify our algorithm performance. Use of the same patient assessment tests employed by practicing physicians ensures clinically accurate values.

- **Rapid assessments and improvements on very large databases**, using sophisticated analysis techniques developed by our own engineers, enable us to quickly evaluate the accuracy of our ECG analysis programs.

The most complete suite of analysis algorithms for advanced ECG applications.

Our Marquette® ECG analysis programs are the preferred choice in a variety of care settings and industries, including hospitals, clinics, physician offices and clinical research organizations (CROs).

- **Marquette 12SL™ ECG analysis program for adults and pediatrics** – the industry's most thoroughly documented, simultaneous 12-lead ECG acquisition analysis program for uncompromising quality and reliability – remains your most clinically valuable second opinion.

- **Marquette Hookup Advisor™ signal quality analysis program** makes our world-renowned ECG analysis program even better. This new software reviews and measures ECG waveforms for signs of artifact and interference, helping to eliminate poor waveform quality during the recording of ECGs.

- **Marquette 12SL with Gender-Specific interpretation** features criteria that help you more easily detect acute myocardial infarction (MI) in female patients, enhancing diagnostic confidence even among occasional readers of ECGs.

- **Marquette 12SL with ACI-TIPI (Acute Cardiac Ischemia Time-Insensitive Predictive Instrument)** considers a patient's age, gender, and chief complaint, as well as ECG measurements, to generate a numerical score that helps predict the probability of acute cardiac ischemia. This optional program provides important additional triage information for patients with chest pain.

- **Simultaneous 15-lead acquisition, storage, and assessment** provides additional ST measurements for the detection of changes that occur in some non-diagnostic 12-lead cases to facilitate the prompt detection of right ventricular and posterior MI.

- **P-Wave Signal Averaging** option for atrial arrhythmia assessment features a patented templating algorithm that enhances P-wave measurement accuracy.

- **Hi-Res Late Potential Analysis** option supports effective ventricular arrhythmia assessment, with an intuitive design that creates a practical, non-invasive alternative to involved invasive testing.

- **Enhanced Pacemaker-Detection Software** improves sensitivity to electronically paced hearts.

- **Serial ECG Comparisons**, through the MUSE cardiology information system, leverages the Marquette 12SL ECG analysis program and analyzes both short- and long-term changes in patients' ECGs.

Taking ECG workflow to the next level.

Full connectivity allows you to tap into the power of GE's MUSE cardiology information system – the industry's predominant cardiology management system – for streamlined workflow and higher functionality. Networked access delivers improved efficiency and decision support.

- Optional Ethernet and MobileLink™ wireless capabilities permit bi-directional communication with the MUSE system so you can quickly retrieve, manage, and archive patient data – and reduce the potential for errors. Also helps meet ACC/AHA guidelines for time-to-cardiologist overread and time-to-treatment goals.

- Instantly access procedure requests and download patient demographic data from the Hospital Information System through the MUSE system. This functionality reduces time-consuming patient data entry and minimizes delays in procedure billing.

- Access the computer ECG patient records immediately, any time of day or night, using the Remote Query option for more responsive patient care.

- Access ECG records from the clinic, office, or other remote facility using a standard modem for maximum decision-making efficiency.

- Secure digital memory card facilitates external archive capabilities.

- Export and archive data in XML format for flexible, open communications.

- Barcoding option assists you in fulfilling JCAHO goals for patient identification and safety.

Innovative features streamline workflow and expand your capabilities.

Specifically designed to enhance your entire staff's efficiency, the MAC 5500 system combines technological advances with ease-of-use features in one system.

- Digital CAM-14 module reduces noise and artifact for clearer ECG tracings.

- Large field-of-view display provides a clear view of the screen from any angle.

- Analog ECG output facilitates easy integration with other cardiac-diagnostic devices, such as echocardiography and nuclear medicine systems.

- Extensive customization – including display and final-report formatting – accommodates individual user preferences.

- Stress option incorporates leading exercise-testing technologies. Signal-acquisition advances help reduce baseline wander and ST-segment distortion to generate clearer, more defined ECGs.

- Barcode and magnetic card reader options help reduce errors by automating the input of patient data.

- Security protocols and user-configurable password protection provides security to assist you in addressing HIPAA requirements.

- Trolley design features a convenient holder for the acquisition module, ample writing surface area, wide bins, and a covered storage compartment.

- Compact system design offers easy mobility.

Comprehensive training further enhances your investment.

- CEU credits support your professional career.

- Just-in-time learning is delivered via training when and where you need it.

- Your entire staff receives the same level of high-quality training to ensure consistency.

MAC 5500 Resting ECG System

Instrument Type:	
Microprocessor augmented automatic electrocardiograph; 14-leadwire acquisition with programmable lead configuration	

Processing	
ECG Interpretation:	Marquette 12SL ECG Analysis Program for Adults and Pediatrics
Computerized Measurements:	15-lead analysis includes measurements of user-selectable additional 3 leads
Optional:	Hi-Res Late Potential Analysis and P-Wave Signal – Averaged ECG
Additional ECG Function:	Vectorcardiography
ECG Analysis Frequency:	500 samples/second (sps)
ECG Storage:	200 ECGs in internal memory
External Archiving:	Secure Digital card
Digital Sampling Rate:	4,000 samples/second/channel
Pre-Acquisition:	Provides 10 seconds of instantaneous ECG acquisition
Dynamic Range:	AC Differential ± 5mV, DC offset ±320 mV
Resolution:	4.88 µV/LSB @ 250 sps, 4.88 µV/LSB @ 500 sps
Frequency Response:	–3 dB @ 0.01 to 150 Hz
Common Mode Rejection:	>140 dB (123 dB with AC filter disabled)
Input Impedance:	>10MΩ @ 10 Hz, defibrillator protected
Patient Leakage:	<10 µA
Pace Detect:	Orthogonal LA, LL, and V6; 750 µV @ 50 µs
Special Acquisition Functions:	Disconnected lead detection, electrode impedance, excessive, AC noise, baseline wander and muscle tremor messages
Heart Rate Meter:	30 to 300 BPM ±10% or 5 BPM, whichever is greater. Heart rates outside this range will not be displayed.

Communications	
MUSE Cardiology Information System compatible	
Infra-Red	
Serial Cable	
Internal modem/fax	
Optional:	Remote Retrieval (Remote Query),
	Wireless (requires additional MUSE software and installation):
	- MobileLink (using WEP security protocols and, in some countries, Cisco LEAP authentication/security)
	- Ultra-High Security MobileLink (Air Fortress security protocol)
	LAN (requires additional MUSE communications software and installation)
	- Communication with MUSE over LAN thru internal RJ-45 jack

Display	
Display Type:	10.4 in (264 mm) diagonal graphics backlit AM LCD (color optional)
Display Resolution:	640 x 480 pixels with waveform enhancement
Display Data:	Heart rate, patient name, ID, clock, waveforms, lead labels, speed, gain and filter settings, warning messages, prompts, and help messages

Writer

Writer Technology:	Thermal dot array
Writer Speeds:	5, 12.5, 25, & 50 mm/s (same as displayed)
Number of Traces:	3, 6, 12, or 15, user selectable (same as displayed)
Writer Sensitivity/Gain:	2.5, 5, 10, 20, 10/5 (split calibration) mm/mV (same as displayed)
Writer Speed Accuracy:	±2%
Writer Amplitude Accuracy:	±5%
Writer Resolution:	Horizontal 1000 dpi @ 25 mm/s, 200 dpi vertical
Paper Type:	Thermal, Z-fold, perforated, fan fold, 300 sheets/pack
Paper Size:	A Size: 8.45 in x 11 in, (214.63 mm x 280 mm)
	A4 Size: 8.27 in x 11.7 in (210 mm x 297.5 mm)

Keyboard

Type:	Sealed elastomer with soft function keys, alphanumeric keys, writer controls, and TrimPad cursor controls

Electrical

Power Supply:	AC or battery operation
Voltage:	100 to 240 VAC +10, –15%
Current:	0.5A @ 115 VAC, 0.3A @ 240 VAC, typical
Frequency:	50 to 60 Hz ±10%
Battery Type:	User replaceable, 18V @ 3.5 AH ±10% rechargeable NiMH
Battery Capacity:	100 single page reports, (typical) or 6 hours continuous display (without printing)
Battery Charge Time:	Approximately 4.5 hours from total discharge (with display off)

Vectorcardiography

Report Formats:	Vector loops of component vectors (P, QRS, ST-T)
Sensitivity:	20, 40, 80, or 160 mm/mV
Time Resolution:	2 ms

Hi-Res Late Potential Analysis and P-Wave Signal–Averaged ECG

Frequency Response/Input :	–3 dB @ 0.01 and 250 Hz
Frequency Response/Output:	Upper Limit: 250 Hz Lower Limit: 0.01, 25, 40, or 80 Hz

Sensitivities:

Raw Data Template:	20 mm/mV
Average Beat:	20 mm/mV and 50 mm/mV
Filtered Signals and Vector Magnitude:	1 mm/µV
Analysis Sampling Rate:	1,000 samples/second/channel
Digital Sampling Rate:	4,000 samples/second/channel
High/Low Pass Filters:	Special filter using Fast Fourier Transform (FFT)
ADC Resolution:	1.22 µV/LSB
Analysis Resolution:	0.1525 µV/LSB

MAC 5500 Resting ECG System

Physical Specifications	
Height:	3.7 in (9.4 cm)* with display closed
Width:	15 in (38.1 cm)*
Depth:	13.8 in (35.1 cm)*
Weight:	Approximately 6.8 kg (15 lbs)* including battery without paper

Environmental Specifications	
Temperature:	
Operating:	50°to 104° F (10° to 40° C)
Transport/Storage:	–40°to 158° F (–40° to 70° C)
Humidity:	
Operating:	20% to 95% RH non-condensing
Transport/Storage:	15% to 95% RH non-condensing
Pressure:	
Operating:	700 to 1060 hPA
Transport/Storage:	500 to 1060 hPA

Trolley Specifications	
Dimensions:	
Height:	39 in (99 cm)
Width:	21 in (54 cm)
Depth:	28 in (72 cm)
Height with acquisition module holder	52.5 in (134 cm)
Weight:	55 lbs. (25 kg)

* without cart

Magnetic Card Reader Specifications	
Character Set	ANSI/ISO ALPHA alphanumeric characters and ANSI/ISO BCD (subset of ASCII (ISO 646 IRV:1991))
Dimensions:	
Height:	1.17 in (28 mm)
Length:	3.94 in (100 mm)
Width:	1.34 in (34 mm)
Temperature Range Operating:	50° F to 104° F (10° C to 40° C)
Humidity:	10% to 90% humidity
Agency Conformance:	Complies with FCC Class A.
CE:	The system has been tested to and conforms with the provisions within 89/336/EEC, Electromagnetic Compatibility directive (EMC)

Barcode Scanner Specifications	
Symbologies	Code 39 (extended), PDF-417, Code 128
Dimensions:	
Height	6.0 inches (15.2 cm)
Length	5.3 inches (13.5 cm)
Width	3.1 inches (7.9 cm)
Light Source	630 nm visible red LED
Temperature Ranges:	
Operating	32° F to +122° F (0° C to 50° C)
Storage	-4° F to +140° F (-20° C to +60° C)
Humidity	0 to 95% non-condensing
Mechanical	Operational after 25 drops from 5 feet (1.53m) to concrete
Vibration	Withstands 5G peak from 20 to 300 Hz
ESD Sensitivity	15 kV to any external surface
Agency Compliance	FCC Class B, EMC Class B, CE Low Voltage Directive, EN60825-1, IEC60825-1, LED Safety: Class 1, UL, cUL, TÜV Certified to N60950, C-Tic

Certification

UL classification, CSA classification, CE marking, CB certificate

Warranty

Standard warranty is one year

Ordering Information

Available in: Simplified Chinese, Czech, Danish, Dutch, English, French, German, Hungarian, Italian, Japanese, Norwegian, Polish, Spanish and Swedish.

Visit gehealthcare.com or contact your local
GE Healthcare Information Technologies representative.

Accessories available from www.gehealthcare.com