

GE Healthcare

# MAC\* 800 Resting ECG

Technical Specifications



<b>Instrument type</b>	
Microprocessor augmented automatic electrocardiograph; 10-leadwire, 12-lead simultaneous acquisition with programmable lead configuration	
<b>Processing</b>	
ECG interpretation	Marquette* 12SL* ECG Analysis Program for Adults and Pediatrics
Computerized measurements	12-lead analysis
ECG analysis frequency	500 samples/second (sps)
Digital sampling rate	1,000 samples/second (sps)
Acquisition mode	Pre-acquisition or post-acquisition, provide 10 seconds of instantaneous ECG acquisition
Dynamic range	AC differential $\pm 10\text{mV}$ , DC offset $\pm 300\text{mV}$
Resolution	4.88 $\mu\text{V/LSB}$
Frequency response	0.04 to 150 Hz
Common mode rejection	>90 dB
Input impedance	>10M $\Omega$ @ 10 Hz, defibrillator protected
Patient leakage	<10 $\mu\text{A}$
Pace detection	Pulsed with amplitude between $\pm 5\text{mV}$ and $\pm 700\text{mV}$ and duration between 0.1ms and 2.2ms duration shall be detected
Special acquisition functions	HookUp Advisor* displays the relative measurement of signal quality
Heart rate meter	30 to 300 BPM $\pm 10\%$ or 5 BPM, whichever is greater. Heart rates outside this range will not be displayed.
Operating system	Microsoft® Windows® CE OS
Start-up time	<15 seconds
Baseline stabilization function	ADS (anti draft system) by Cubic Spline correction algorithm
<b>Display</b>	
Display type	7" color TFT
Display resolution	800 x 480 pixels
Display data	Operation mode, real time heart rate, time and date, patient demographics, battery status, lead check status, and internal storage capacity for resting ECG files when the option for internal ECG storage is activated
	6-lead standard display Optional 12-lead display
<b>Writer</b>	
Writer technology	Thermal dot array
Writer speed	5, 25 and 50mm/s
Number of traces	Up to 6 ECG traces
Writer sensitivity/gain	2.5, 5, 10, 20 and 40mm/mV and automatic
Speed accuracy	$\pm 5\%$
Amplitude accuracy	$\pm 5\%$
Writer resolution	1000 dots/in at 25mm/sec horizontal, 200 dots/in vertical
Paper type	Thermal. Z-fold (140mmx110mm)
<b>Keyboard</b>	
Type	T9 SMS-style keyboard integrated with sealed rubber membrane, withstands hospital-grade cleaning agents, dedicated quick-access function keys
<b>Software standard</b>	
Resting ECG Mode	Records and prints 12-lead resting ECGs with 10 seconds duration as a standard feature
Arrhythmia Mode	Continuously monitors ECG and prints report when arrhythmia events of the user-selected class occur
HookUp Advisor	The device shall display the relative measurement of signal quality
Multi-language support	Supports 19 languages
<b>Software options</b>	
Measurement	Supports measurement with Marquette 12SL ECG Analysis Program
Interpretation and measurement	Supports measurement and interpretation with Marquette 12SL ECG Analysis Program
ACI-TIPI	Provides numeric score of probability of acute cardiac ischemia
RR analysis	Up to 5 minutes or 500 beats
Internal and external storage	Provides File Manager menu to support 100 or 300 ECGs storage in internal memory; 100 or 200 ECGs in Secure Digital card
PDF output	Supports exported ECG in PDF format
12-lead display	Supports 12-lead resting waveform display
<b>Pharma options</b>	
Clinical Trials Data Guard	Supports clinical trials data object which is used in pharma
21 CFR	Supports 21 CFR Part 11 audit documentation for pharmaceutical drug trials

<b>Communication</b>	
MAC 800 to MUSE* Cardiology Information System (optional)	
WiFi	ECG transmission to MUSE, order download from MUSE
LAN (RJ45 port)	ECG transmission to MUSE, order download from MUSE
Internal Modem	ECG transmission from/to MUSE, order download from MUSE
RS232	ECG transmission from/to MUSE, order download from MUSE
MAC 800 to CardioSoft* (optional)	
WiFi	ECG transmission to CardioSoft, auto transport to share folder/FTP
LAN (RJ45 port)	ECG transmission to CardioSoft, auto transport to share folder/FTP
Internal Modem	ECG transmission to CardioSoft
RS232	ECG transmission to CardioSoft
Secure Digital Card (2GB, FAT16/32)	ECG export to SD card
<b>Accessories</b>	
IEC/AHA lead-wire and electrode adaptor sets (user selectable)†	
10-lead patient cable (user selectable replaceable leads or fixed leads cables)†	
NEHB patient cable (user selectable)†	
10-lead KISS patient cable (user selectable replaceable or fixed leads cables). To be powered by external KISS pump (purchased separately)†	
Electrodes (disposable or reusable, user selectable)†	
Country-specific power cords†	
Z-fold paper	
<b>Storage/export (optional)</b>	
ECG storage format	GE storage format for MUSE and CardioSoft, XML storage format, PDF storage format
Secure Digital Card (2GB, FAT16/32)	ECG export to SD card
Configurable PDF file name	User-configurable file name, which includes Patient_ID, Last Name, First Name, Date of Birth (DDMMYYYY), Procedure, Date of Test (DDMMYYYY), Export Date (DDMMYYYY)
<b>External peripherals USB</b>	
Keyboard	Standard USB Keyboard (English, Germany, Italian, Spanish, French)
Laser printer	USB laser printer and network laser printer supported; Laser printer needs to support PCL 5e protocol and have a minimum 8MB memory
Barcode reader	USB Barcode Reader (IT4600G)
Magnetic card reader	USB Magnetic card reader, which shall support ISO 7810, 7811-1, -2, -3, -4, -5.
<b>Report format</b>	
Thermal printer (Z-fold)	
4x2.5x3_25	4x2.5x3_25_R1
4x2.5x3_50	4x2.5x3_50_R1
4x5x3_25	4x5x3_50
4x10x3_25	4x10x3_50
2x5x6_25	2x5x6_50
2x10x6_25	2x10x6_50
Median_25	4x2.5x3_25_R2_P (with pharma object)
Median_50	4x2.5x3_25_R3_P (with pharma object)
Laser printer (A4/Standard letter)	
4x2.5x3_25	4x2.5x3_25_R1
4x2.5x3_25_R3	MUSE1 (with pharma object)
4x2.5x3_25_R2	MUSE2 (with pharma object)
1x10x12_25	
<b>Safety &amp; regulatory</b>	
IEC 60601-1: 1988 +Amd-1: 1991, +Amd-2: 1995 General Requirements for Safety	
IEC 60601-1-2: 2007 General Requirements for Safety Electromagnetic Compatibility	
IEC 60601-1-1: 2000 Medical Electrical Equipment: General Requirements for Safety	
IEC 60601-1-4: 2000 General Requirements for Safety – Collateral Standard: Programmable electrical medical systems	
IEC 60601-1-6: 2006 General Requirements for Safety – Usability	
IEC 60601-2-25: 1993 +Amd-1: 1999 Safety of Electrocardiographs	
IEC 60601-2-51: 2003 Safety and performance of ECG recorders	
EN 55011:2007/A2: 2007 Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics – Limits and methods of measurement	
ANSI/AAMI EC11: 1991/(R) 2001/(R) 2007 Diagnostic Electrocardiographic Devices	
ANSI/AAMI EC13: 2002 /(R) 2007: Cardiac Monitors, Heart Rate Meters, and Alarms (On screen heart rate meter, clause 4.2.7 only)	
ANSI/AAMI EC57: 1998/(R) 2003 Testing and Reporting Performance Results of Cardiac Rhythm and ST-segment Measurement Algorithms (All clauses except 4.3.3.2, 4.3.3.3 and 4.6)	

UL 60601-1:2003 Medical Electrical Equipment – part 1: General Requirements for Safety	
CAN/USA C22.2 No.601.1	
GB 9706.1-2007 Medical Electrical Equipment – part 1: General Requirements for Safety	
GB10793-2000 Medical Electrical Equipment – part 2: Particular Requirements for the Safety of Electrocardiographs	
YY1139-2000 Single and multichannel electrocardiograph	
<b>Electrical</b>	
Power supply	Internal AC/DC or battery operation
AC/DC operation specifications	
Input voltage	100 to 240 VAC $\pm$ 10 %
Input power	Power input of device $\leq$ 80VA
Input frequency	50 Hz/60 Hz, $\pm$ 3 Hz
Battery specifications	
Battery type	Replaceable and rechargeable, 7.2V@ 4.5 AH $\pm$ 10%, rechargeable Lithium-Ion
Battery capacity	1000 single-page reports or 2 hours continuous display (without printing) at a minimum
Battery charge time	$\leq$ 4.5 hours
<b>Physical specification</b>	
Dimensions	120 x 330 x 280 mm (H x W x D)
Weight	3.0 kg including battery, without paper
<b>Environmental specification</b>	
Temperature	
Operating	+5°C to +40°C
Transport/storage	-30°C to +60°C
Humidity	
Operating	25% to 95% (non-condensing)
Transport/storage	10% to 95% (non-condensing)
Pressure	
Operating	700 to 1060 hPA
Transport/storage	500 to 1060 hPA

\*Availability of these supplies and accessories varies by country. Please contact your local GE Healthcare representative for availability.

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## About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services helps our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our “healthymagination” vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality and efficiency around the world.

