GE HealthCare

# MAC VU360™ v1.02

## Resting ECG workstation

## General

| | |
|---|---|
| Instrument type | Microprocessor augmented automatic electrocardiograph; 14-leadwire acquisition with programmable lead configuration |
| ECG interpretation | Marquette™ 12SL™ ECG Analysis Program for Adults and Pediatrics |
| Computerized measurements | 15-lead analysis includes measurements of user-selectable additional 3 leads |
| Heart rate meter | 30 to 300 BPM ±10% or 5 BPM, whichever is greater. Heart rates outside this range will not be displayed |
| ECG data formats | GE HealthCare Hi-Fidelity ECG, XML |
| External archiving | USB removable media<br>SFTP (Secure File Transfer Protocol)<br>Shared Drive |
| Pre-acquisition | Provides 10 seconds of instantaneous ECG acquisition |
| Digital rhythm | Up to 5 minutes of continuous rhythm storage (exportable as a PDF) |
| Full disclosure | Select, review acquire, print and/or transmit any 10 second ECG segment from the continuous 12 or 15 lead ECG data in internal memory (optional) |
| Storage | 1000 records consisting of 10 second Resting ECG records and Digital Rhythm records on the device internal memory |
| Dynamic range | AC Differential ±5mV, DC offset ±300 mV |
| Common mode rejection | >130 dB (>100 dB with AC filter disabled) |
| Input impedance | >10MΩ @ 10 Hz |
| Defibrillation protection | Per IEC 60601-2-25:2011 |
| Patient leakage | <10 µA |
| Log Aggregation | Event log entries can be sent directly to a networked Log Aggregator via syslog protocol |

### Specifications for digital acquisition and analysis of waveforms

| | |
|---|---|
| Analog to digital conversion | 24-bit analog to digital conversion resolution; Bandwidth: DC to 500 Hz; Digital over sampling rate: 512 ksps |
| Down sampled ECG waveform | Bandwidth: 0.04 to 150 Hz;<br>Sample rate: 2 ksps; Resolution: 1.22 µV |
| Input to 12SL | Bandwidth: 0.04, 0.56 ZPD to 150 Hz;<br>Sample rate: 1 ksps; Resolution: 4.88 µV |
| Additional report filters | 20 Hz, 40 Hz, 100 Hz, or 150 Hz |

### Specification for stored/transmitted waveforms

| | |
|---|---|
| Digital rhythm waveform | Bandwidth: 0.04, 0.56 ZPD to 150 Hz;<br>Sample rate: 1000 sps;<br>Resolution: 4.88 µV |
| 12-lead ECG waveform | Bandwidth: 0.04, 0.56 ZPD to 150 Hz;<br>Sample rate: 500 & 1000 sps;<br>Resolution: 4.88 µV |
| Representative (median) complex | Sample rate: 500 & 1000 sps;<br>Resolution: 4.88 µV |

### Pace detection

| | |
|---|---|
| Pacemaker waveform | Bandwidth: 23.5 Hz to 10.5 kHz;<br>Sample rate: 75 ksps;<br>Resolution: 11.8 µV |
| Pace detection | Duration: 0.2 ms to 2.1 ms<br>Amplitude: 2 mV to 700 mV<br>Separation: 1 ms or greater |
| Pace annotation | Dedicated pace channel on display and printed reports |

## Communications

| | |
|---|---|
| ECG management systems connectivity | MUSE™ Cardiology Information System Compatible (v8 or later) with bi-directional orders and ADT support |
| | Transmit Resting ECG records to CardioSoft via removable media (v6.73 or later) or via network (v7 or later) |
| DICOM | Modality Worklist/Orders: Supported via GE HealthCare MUSE (v9 or higher) and DICOM Gateway with bi-directional orders support |
| EMR connectivity | Via MUSE Cardiology Information System (v8 or later) and via EMR Gateway with bi-directional ADT support |
| Web | HTML/web capable for access to pre-configured web applications (optional) |
| Data export | Export of Resting ECG (in PDF or XML format), Digital Rhythm and Full Disclosure reports (in PDF format) over Secures File Transfer Protocol (SFTP) or to a Shared folder |
| Wireless | Wireless 802.11 a/b/g/n wireless connectivity (2.4GHz/5GHz) |
| | IPV4 |
| | DHCP, hostname and static IP options for configuring device IP/network address |
| | WEP and Enhanced Security WPA-PSK, WPA2-PSK, WPA/WPA2 enterprise protocols TLS, PEAP-MSCHAPV2, PEAP-GTC, TTLS-MSCHAPV2, TTLS-GTC. (PEAP requires network evaluation/approval prior to purchase) |
| | Ultra-high security 4096 bit encryption/long certificate support |
| | SHA1 and SHA2 support |
| Network connectivity | 802.3 Ethernet interface via RJ45 connector |
| | Compatible to 10Base-T, 100Base-T and 1000Base-T LAN |
| | IPV4 |
| | DHCP, hostname and static IP options for configuring device IP/network address |
| Network clock | Network time synchronization (NTP) |

## Display

| | |
|---|---|
| Display & resolution | 15.6" diagonal, LED backlit, Full HD (1920 × 1080 pixels) |
| Touch screen type | Projected Capacitive (PCAP) multipoint touch input that works while wearing medical exam gloves |
| Display data | Heart rate, patient name, patient ID, date, clock, battery power indicator, scrolling waveforms, lead labels, speed, gain and filter settings, warning messages, prompts, hookup advisor and help messages |
| Sensors | Accelerometer for putting unit in standby when display is closed |

## Writer

| | |
|---|---|
| Writer technology | Integrated thermal dot array |
| Number of traces | 3, 6, 12, or 15 user selectable |
| Writer speeds | 5, 12.5, 25, & 50 mm/s |
| Writer sensitivity/gain | 2.5, 5, 10, 20 mm/mV, and 10/5 mm/mV split gain |
| Writer speed accuracy | 5, 12.5 mm/s @ +5%<br>25, 50 mm/s @ ±2% |
| Writer amplitude accuracy | ±5% |
| Writer resolution | Horizontal: 40 dots/mm @ 25 mm/s<br>Vertical: 8 dots/mm |
| Paper type | Thermal, Z-fold, perforated, fan fold, 300 sheets/pack |
| Paper size | 8.5 in × 11 in (215mm × 280 mm)<br>A4: 8.27 in × 11.7 in (210 mm × 297.5 mm) |

## Keyboard

| | |
|---|---|
| Type | Sealed elastomer membrane keyboard with tactile feedback |
| Keys | Function keys, Alphanumeric keys, Writer controls, Trimpad cursor controls |

## Electrical

| | |
|---|---|
| Power supply | AC mains or battery operation |
| Input voltage | 100-240 VAC + 10% |
| Input frequency | 50-60 Hz + 3 Hz |
| Battery type | Replaceable and rechargeable internal battery |
| Battery capacity | The system shall be able to continuously display scrolling waveforms without printing for a minimum of six hours (360 minutes) when the maximum total battery capacity is installed and the battery is fully charged. |
| Battery charge time | Approximately 240 minutes from total discharge when device is off or standby |

## Security and privacy

| | |
|---|---|
| Encryption | All files containing PHI, local users and passwords |
| Login authentication | Network: LDAP/Active Directory<br>Local: User database |
| User management | Customizable roles for limiting system access by user groups for Admin, Clinical, Service, Biomed, and user defined up to 10 customized roles |
| Audit trail | All user logins, logouts and login failures, file deletions, file changes, file views, file acquisitions, file transmissions, file printouts, system configuration changes |
| PHI access | Controlled by customizable roles with configurable advanced strict PHI access rules |
| PHI access logs | Detailed and exportable logs of all PHI viewing by users |
| Emergency access providing (STAT mode) tasks | This user can access the device without login credentials to perform emergency such as acquiring an ECG or rhythm while preventing access to any stored patient data, orders, ADT, or 3rd party applications |
| USB lockout | Software controls to disable USB ports/connections |

## Vectorcardiography

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|---|---|
| Report formats | Vector loops of main vector (QRS-STT) |
| Sensitivity | 20, 40, 80, or 160 mm/mv |
| Time resolution | 2 ms |

## Physical specifications

| | |
|---|---|
| **Weight** | 75.3 lbs max with adjustable height premium trolley and 1 battery |

### System with fixed height value trolley

| | |
|---|---|
| Handle height | 36 in (91 cm) |
| Max height | 57 in (145 cm) |
| Width | 20.5 in (52 cm) |
| Depth | 23.5 in (60 cm) |

### System with fixed height premium trolley

| | |
|---|---|
| Handle height | 35 in (89 cm) or 37 in (94 cm) |
| Max height | 56 in (142 cm) to 58 in (147 cm) |
| Width | 19 in (48 cm) |
| Depth | 28 in (71 cm) |

### System with adjustable height premium trolley

| | |
|---|---|
| Handle height | From 35 in (89 cm) to 41 in (104 cm) |
| Max height | From 56 in (142 cm) to 62 in (158 cm) |
| Width | 19 in (48 cm) |
| Depth | 28 in (71 cm) |

## Environmental specifications

### Temperature

| | |
|---|---|
| Operating | 50° to 104° F (10° to 40° C) |
| Transport/storage | –4° to 140° F (–20° to 60° C) |

### Humidity

| | |
|---|---|
| Operating | 20% to 95% RH non-condensing |
| Transport/storage | 15% to 95% RH non-condensing |

### Pressure

| | |
|---|---|
| Operating | 70 to 106 kPa |
| Transport/storage | 50 to 106 kPa |

## Input devices

| | |
|---|---|
| Keyboard | Sealed elastomer membrane keyboard with tactile feedback |
| Touchscreen | Full HD (1080p) projected Capacitive (PCAP) multipoint touch input that works while wearing medical exam gloves |
| Barcode | Integrated in CAM or external barcode scanner (both optional) |
| Mouse | Supported but not included |

## External USB barcode scanner

| | |
|---|---|
| Types | External and internal integrated in the CC-14 acquisition unit (both optional) |
| Formats | Fixed and variable length |
| Symbologies | Code-128, PDF417, Code 39, Interleaved Code 2 of 5, and Data Matrix symbology for characters A-Z (upper case), a-z (lower case), and 0-9 for all supported languages |

## Acquisition unit

| | |
|---|---|
| Quality Indicators | Real-time Hookup Advisor with LED lead quality indicators |
| Remote control | ECG acquisition button, rhythm acquisition button, stop button |
| Ingress Protection Level | IPx4 |
| Integrated Input Device | Optional integrated bar code scanner |
| Types | Fixed and variable length |
| Symbologies | Code-128, PDF417, Code 39, Interleaved Code 2 of 5, and Data Matrix symbology for characters A-Z (upper case), a-z (lower case), and 0-9 for all supported languages |

## Cleaning

| | |
|---|---|
| Approved cleaning agents | Soap and water solution<br>Sodium Hypochlorite (NaOCl) 5% solution<br>Ethanol (ethyl alcohol) 96% (v/v)<br>Isopropyl alcohol 70% (m/m)<br>Hydrogen Peroxide 20% (v/v)<br>Phenol 2% (V/V) |
| FDA cleaning agent for efficacy | Super Sani-Cloths |

## Certification

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|---|---|
| Certification marks | cTUVus |
| Standards complied with | EN 60601-1:1990, A1:1993, A2:1995<br>EN 60601-1:2006/A1:2013<br>EN 60601-1-1:2001<br>EN 60601-1-2 : 2007 +AC 2010<br>EN 60601-1-2:2015<br>EN 60601-1-4:1996/A1:1999<br>EN 60601-1-6:2010<br>EN 60601-2-25:1995, +A1:1999<br>EN 60601-2-25:2011<br>EN 60601-2-51:2003<br>EN 62366:2008<br>EN 62304:2006 |

## Language support

| | |
|---|---|
| Available user interface languages | Danish, Dutch, English, French, Finnish, German, Italian, Norwegian, Swedish |

Not all products or features are available in all markets. Contact a GE HealthCare Representative for more information.
Please visit http://www.gehealthcare.com. Data subject to change.



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