GE Healthcare

CardioLab

Electrophysiology Recording System

EmPower Workflow. EmPower Integration. EmPower Synchronization.

With the legacy of Prucka Engineering inside, CardioLab™ can deliver the EP data and visualization you need, where you need it, when it needs to be there. That's because CardioLab is part of a comprehensive EP lab workflow infrastructure we've designed to help make you efficient, productive, and able to focus more on your patients. Through intelligent design everything works as one. The result: information is available where you think it should be, when you think it should be there, regardless of where it's coming from. CardioLab systems bring high efficiency and excellent signal quality to electrophysiology recording, combining the performance of Microsoft® Windows® with up to 128-channel scalability. The CardioLab systems' features and use of Windows may help facilitate quick proficiency and long-term productivity. Convenient single-stroke function keys, customizable macros, and multitasking efficiency may translate into greater throughput. Microsoft Word integration enables efficient report generation and reduces system interaction. Case diagnosis can potentially be expedited by CardioLab's connectivity, intuitive user interface, and advanced clinical tools, such as interfaces to common ablation generators and 3D mapping systems, activation mapping, and interval alignment.

Excellent connectivity and visualization capabilities designed to help facilitate department productivity

CardioLab offers integration to help enable productivity in the EP lab and help provide high levels of care for your patients. Our latest networking, connectivity and visualization functions include:

- Digital signal display algorithms provide excellent waveform fidelity to help better visualize small physiological signals. Flexible, user-defined display settings deliver waveform characteristics that help meet the needs of the individual physician.
- CardioICE™ Synchronized Ultrasound (optional on XT systems) brings together the CardioLab and Vivid™ i/q ultrasound systems to provide an integrated workflow solution with exceptional control and access to information. Synchronized Ultrasound begins by bringing the Vivid i/q with ICE into the lab with an innovative bedside mount and takes information integration to the next level. By reproducing the display of the Vivid i/q on the CardioLab window, CardioICE allows continuous visualization of the ablation catheter and devices inside the cardiac anatomy in real-time, with electrograms. Images captured during the procedure are time-aligned with the waveforms and information, creating a synchronized case report with images, waveforms and information.
- Standard and user-defined forms, allowing information collection at the point-of-care to support registry submissions and user-defined data requirements
- Invasive Workbench: Integrated research tool helps unlock the potential value of your data, empowering you to explore innovative ways to treat patient populations and perform research[1].
- Multi-Path documentation: Streamlined documentation and reporting workflow helps you document your case with fewer interruptions and still meet your documentation requirements[2]. With the flexibility to start a report anywhere on the network, and the ability to document on multiple stations simultaneously, you are now empowered to focus more on the patient and less on the process.
- Esignature: Integrated electronic signature capabilities give you the ability to sign and lock reports from within CardioLab using your system logon and password.
- Automated user tracking: Electronic tagging of each user created medical record with author and location. Facilitate retrospective audit of tasks and help eliminate the need for manual event log signatures.

Flexible system configurations offer high functionality and value.

GE Healthcare offers CardioLab systems in configurations tailored to help address the demands of your clinical caseload:

- CardioLab IT for essential functionality and exceptional performance.
- CardioLab XT for efficient information integration of high volume labs.

System Features and Options

GE Innova™ X-ray bi-directional interface	
Innova Central tableside touch screen interface	
Mainstream/ Sidestream End-Tidal CO_2[1]	
Dual or triple monitor system configuration	
CardioImage Fluoroscopy Image Management System	
Mapping tools, including pace mapping, activation and interval alignment	
CARTO® System Bi-directional Interface	
Connectivity to Ablation generator(s)	
Integrated Vitals and Audible Indicators to facilitate data recording[1]	
CLab II Plus Amplifier	• 64/128 channel • Configurable sampling rates: 1K, 2K, & 4K • Easy access to raw waveform data (data extraction), binary & ASCII formats
Networking solutions	• INW Central Server for networked data storage • Nursing Workstation for simultaneous data entry • Holding area Client Workstation with connectivity to GE CARESCAPE™ B450 and B650, Dash™ 3000/4000/5000 and GE Solar™ 8000M/i (with TRAM or PDM) bedside monitors
CVIS Applications (via Centricity™ CVIS)	• Administrative and Clinical Statistics • Inventory • Electronic white board scheduling module • ADT, Orders, Billing, Results Interface(s)

Specifications

Technical specifications

Processor/Data Storage	• Intel® Xeon® 3.5 GHz Quad-core or greater processor • 16 GB of RAM • 2 x 500 GB in RAID 1 hard drives • DVD RW drive • SDHC Card • MS SQL Server® 2008 Standard Edition • Optical Scroll Mouse • Microsoft Windows 7 Ultimate for Embedded Systems (32-bit) • Microsoft Office Professional Plus 2010
Networking	100/1000 Mbps Base-T Ethernet, TCP/IP
Monitors	• 20" or larger flat panel • 1600 x 1200 resolution
Printer option	• Black & White HP M401n[1] • Color HP M451nw[1]

Environmental, electrical specifications

Operating temperature	+15°C to +30°C
Storage temperature	-10°C to +50°C
Storage humidity	10% to 85% non-condensing
Maximum current draw	15A/ 120V

[1] Not available in all markets

[2] As compared to previous releases of MLCL

CLab II Plus Amplifier technical specifications

ECG inputs	• High Pass Filter : 0.05Hz, 0.5Hz, 5.0Hz • Low Pass Filter: 40Hz, 100Hz • Gain: 50 – 10,000 in 8 settings
Catheter/ Intracardiac	• High Pass Filter: DC, 0.05Hz, 0.5 Hz, 5.0 Hz, 30 Hz and 100 Hz • Low Pass Filter: 150 Hz, 500 Hz, 1000 Hz • Gain: 50 – 10,000 in 8 settings
Pressure (4 Inputs)	• Up to 4 pressure channels • Range: -25 mmHg to 349 mmHg • Inputs compatible with 5uV/V/mmHg pressure transducers. **Caution:** CardioLab II Plus amplifier defibrillation protection is only guaranteed with the following devices: **Cable:** Fogg Systems 0253-2256 **Transducer:** Medex NOVATRANS® II MX860 **Cable:** Fogg Systems 0310-2256 **Transducer:** Merit Med Systems MERITRANS® 100 or 210 **Cable:** Fogg Systems 0333-2256 **Transducer:** Medex TranStar® MX950 **Cable:** Fogg Systems 0386-2256 **Transducer:** Medex LogiCal®® MX960 **Cable:** Fogg Systems 0389-2256 **Transducer:** BD™ DTX Plus **Cable:** Fogg Systems 0391-2256 **Transducer:** BD P23XL-1 (684000) **Cable:** Fogg Systems 0395-2256 **Transducer:** Edwards Lifesciences TruWave PX-600 **Cable:** Fogg Systems 0408-2256 **Transducer:** ICU medical TRANSPAC® IV **Cable:** Fogg Systems 0431-2256 **Transducer:** Namic® PERCEPTOR® Manifold [w/Integral Transducer] **Cable:** Fogg Systems 0432-2256 **Transducer:** Namic PERCEPTOR DT
Design	• Sampling Rate: 1K, 2K, 4K • Common Mode Rejection Ratio (ECG and Intracardiac): 100dB min

CardioImage Fluoroscopy Image Management system option.

- View real-time images from X-ray, IVUS, echo, or any standard video source for secondary display on a dedicated 1600 x 1200 monitor.
- Acquire analog monochrome video with 1280 x 1024 resolution at 72 frames/second, with a maximum input frequency of 135MHz, or acquire analog RGB color video from 1 input with resolution up to 1920 x 1200 at 60 frames/second, or acquire digital video (DVI-D) from 1 input with resolution up to 1920 x 1200 at 60 frames/second.

Physical specifications

	Width (in/cm)	Depth (in/cm)	Height (in/cm)	Weight (lbs/kg)
Computer – HP z440	6.65/16.9	17.5/44.5	17.0/43	30.3/13.8
Workstation Desk – 65”	65/165	30/76	29.5/74.9	340/154
Workstation Desk – 47”	47/119	30/76	29.5/74.9	265/120
Accessory Cart -27”	27/68.5	28/71	30/76.2	300/136
PDM Base Station Plus	11.3/28.6	13.0/33.1	3.3/8.4	5.5/2.5
PDM	5.8/14.8	10.1/25.7	3.1/7.9	2.4/1.1
Amplifier (32/64 Channels)	14/36	14/36	9.5/24	22/10
Amplifier (96/128 Channels)	14/36	14/36	14/36	25/11
Flat Panel Monitor (20”)	17.7/45	9/22.8	17.2/43.6	22/10
Flat Panel Monitor (21”)	18.3/46.5	8.2/20.9	17.8/45.3	19/8.6
Integrated Electronics Box (IEB)	11/28	21/53	24.5/62	75/34

Physiologic specifications

	CLab II Plus 128	CLab II Plus 64
Total Recording Channels	128	64
Intracardiac Channels	108	44
Stim	4	4
Catheter Inputs	224	96
ECG	12-Lead	12-Lead
Pressure	4	4
Catheter Input Modules	7	3

Centricity Cardiology INW Server Specifications - GE Supplied Hardware

HP ML350p Gen9	INW Server
Processor	2.4 GHz 6-core Intel Xeon® or greater processor
Memory	32 GB/PC3L-10600R
Storage	C: RAID 1 – two 300 GB Hot Pluggable SAS D: RAID 6 – 6 1.2 TB Hot Pluggable SAS
DVD-ROM	SATA
Case	Rack Mount
Number of Studies[3]	4.5 TB for on-line studies; storage for Approximately 240,000 Cath Studies Approximately 24,000 EP studies
Software Configurations	• Centricity INW Server Application • MS Windows Server 2008 R2 for Embedded Systems, MS SQL Server 2008 Standard Edition

Client Workstation Specifications - GE Supplied Hardware

	Client Workstation
Processor	Intel® Xeon® 3.5 GHz Quad-core or greater
Memory	16 GB of RAM
Storage	2 x 500 GB in RAID 1 hard drives
Monitor Resolution	1600 x 1200 resolution
Network Interface	One IEEE 802.3 100/1000 BASE-T compatible network interface. TCP/IP to the Centricity Cardiology INW Server.
Media & Accessories	DVD Drive, SDHC card drive, keyboard, mouse, required cables and accessories
Monitor	20” or larger flat panel
Included Software	Microsoft Windows 7 Ultimate for Embedded Systems (32-bit), Microsoft Office Professional Plus 2010, MS SQL Server® 2008 Express Edition

[3] Assumes 20 MB per Cath Study and 200 MB per EP Study (average case size can vary depending on usage preferences).

Virtual Client Minimum Specifications - Customer supplied Hardware

When purchasing the software-only version of INW Client software the following requirements must be met.
Even when these minimum requirements are met, GE does not guarantee successful installation of SW-only client.

CPU	Intel Quad-Core processor with Virtual Technology. Minimum of i5-4570 or equivalent Xeon processor.
Memory	Host system requires at least 8GB of RAM 2GB of which is allocated to Virtual Review Client
USB	Host system requires at least 1 USB port
Hard Drive	Host system requires 50 GB of free hard drive space for each Virtual Review Client
Mouse/Keyboard/DVD drive	System requires standard keyboard, USB mouse and a DVD-R drive
Network Interface	IEEE 802.3 100 or 1000 BASE-T compatible network interface card for connectivity to the Centricity Cardiology INW Server
Video Display	Host system must provide minimum resolution of 1600 x 1200 set to True Color (32-bit) with a refresh rate of at least 60Hz.
Customer-supplied software requirements	• Operating System: Windows 7 64-bit, Windows 8 64-bit or Windows 10 64-bit with VMware Workstation Player • VMware Player: VMware Workstation Player 12.5.0 (recommended) • VMware Tools: Tools v10.0.10.4301679 • NOTE: The Virtual Review is not compatible with the VMware Player's Unity mode
Safety Protocol	When used in a patient care area, the hardware must meet IEC60601-1

Virtual Client Software not available in all markets.

GE imagination at work

About GE Healthcare

GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. GE works on things that matter - great people and technologies taking on tough challenges. From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients.

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