NextGen LOGIQ *e* Ultrasound

Product Description

The NextGen LOGIQ™ *e* combines the high performance of a console system with the portability of a laptop. GE Healthcare's compact system is designed for general imaging, musculoskeletal, anesthesiology, interventional, emergency, and critical care applications. It provides ultrasound imaging with precise anatomical detail at a variety of depths. The system includes innovative features that help simplify interventional procedures.

General Specification

Console Dimensions

Height	• 70 mm (2.75 in) console only • 100 mm (3.94 in) with handle
Width	• 295 mm (11.61 in) console only • 343 mm (13.50 in) with handle
Length	• 346 mm (13.62 in) console only • 375mm (14.76 in) with handle
Weight with Battery	• approximately 5.2 Kg (11.5 lbs)

Console Electrical Power

Voltage: 100-240 V AC

Frequency: 50/60 Hz

Power: Max. 130 VA

Console Design

Laptop Style

Lithium Ion Battery

Integrated Solid State Drive

CPU – Intel Duo Core

Operating System – Microsoft® Windows® 7

Docking Cart Dimensions

Height: 810-950 mm (26.6-31.2 in)

Width: 470 mm (15.4 in)

Depth: 617 mm (20.2 in)

Weight: 57 kg (125.7 lbs) without accessories

Weight: 64 kg (141.1 lbs) with Extended Life Battery

Isolation Cart Dimensions

Height: 830-1130 mm (32.7-44.5 in)

Width: 540 mm (21.3 in)

Depth: 510 mm (20.1 in)

Weight: 30.5 kg (67.1 lbs) without accessories

Weight: 35.5 kg (78.3 lbs) with 3 Probe Port

User Interface

Operator Keyboard

Alphanumeric Keyboard

Ergonomic Hard Keys

Backlight Keys

Display Screen

15 in High-Resolution Color LCD

Resolution: 1024 x 768

Horizontal/Vertical viewing angle: +/-80 degree

Brightness Adjustment

Integrated Speakers

Audio Volume Adjustment

Interactive Dynamic Software Menu

Console Interfaces

DC Power Input

USB 2.0 (3)

LAN 10/100/1000 BaseT

Docking Cart Connector

HDMI

Docking Cart Interfaces

AC Power Input

DVI

USB 2.0 (4)

Speakers

3 Probe Port (optional)

Isolation Cart Interfaces

AC Power Input

3 Probe Port (optional)

System Overview

Applications

Abdomen

Cardiac

Gynecology

Musculoskeletal

System Overview (Continued)

Applications (Continued)

Obstetrical

Nerve Block

Pediatric

Small Parts

Urological

Vascular

Rheumatology

Emergency Medicine

Cardiac intra-operative

Transducer Types

Convex Array: C1-5-RS

Microconvex Array: 8C-RS, E8C-RS

Linear Array: 9L-RS, 12L-RS, L4-12t-RS, L8-18i-RS, L10-22-RS

Phased Array: 3Sc-RS, 6S-RS

TEE: 6Tc-RS

Operating Modes

B-Mode

M-Mode

Anatomical M-Mode/Color M-Mode (AMM) (optional)

Color Flow Mode (CFM)

Power Doppler Imaging (PDI)

High-Res PDI (optional)

Continuous Wave Doppler (CWD) (optional)

Pulse Wave Doppler (PWD)

Tissue Velocity Image/Tissue Velocity Doppler (TVI/TVD) (optional)

Needle Recognition

Standard Features

Integrated Solid State Drive

Automatic Optimization

CrossXBeam™

Standard Features (Continued)

Speckle Reduction Imaging (SRI-HD)

Virtual Convex/Virtual Apex

Fine Angle Steer

HD Zoom (Write Zoom)

Coded Harmonic Imaging (CHI)

Raw Data Processing

Quicksave

On-board User Manual (Help)

InSite™ ExC capability

Loop storage—from live scanning and from memory

Patient Information Database

Customizable User Interface

Full M&A Calculation Package with Real Time Auto Doppler Calculations

Vascular Calcs

Cardiac Calcs

OB Calcs and Tables

Fetal Trending

Multi Gestational Calcs

Musculoskeletal and Hip Dysplasia Calcs

Gynecological Calcs

Urological Calcs

Renal Calcs

Small Parts Calcs

Rheumatology Calcs

Pediatric Calcs

Report Writer Package

Software Options

easy3D

LOGIQ View

Needle Recognition

Stress Echo

eSmart Trainer

Auto IMT

DICOM® 3.0 Connectivity/Encrypted DICOM

System Overview (Continued)

Software Options (Continued)

Flow Quantitative Analysis

Patient Follow-up Tool with fusion

M-Color Flow Mode (CM)

Anatomical M-Mode (AMM)

TVI/TVD

High-Res PDI

Ophthalmic

Hardware Options

Footswitch

Printer

CWD

USB ECG (AHA/IEC)

Barcode Scanner

External DVD R/W storage

Cart Options

Docking Cart	• 3 probe port
	• Extended Life Battery
Isolation Cart	• 3 probe port
	• Storage Basket
	• Storage drawer

Display Modes

Simultaneous Capability	• B/PW or TVI/TVD
	• B/CFM or PDI
	• B/M or AMM
	• Dual B (B/B)
	• Dual B + CFM or PDI
	• Needle Recognition + CFM (PDI)
	• Real-time Triplex Mode
Selectable Alternating Modes	• Needle Recognition
	• B/M
	• B/PW
	• B/CW
	• B + CFM (PDI)/M
	• B + CFM (PDI)/PW
	• B + CFM (PDI)/CW
	• 3D – Mode

Display Modes (Continued)

Multi Image Split Screen	• Live and/or frozen
	• B + B/CFM or PDI
	• Independent Cine playback
	• Conventional or wide screen display
	• Conventional or wide screen display

Zoom: Read/Write Zoom

Colorized Image	• Colorized B
	• Colorized M
	• Colorized PW
	• Colorized CW
Timeline Display	• Independent Dual B/PW/CW Display
	• Display Formats: Top/Bottom or Side/Side selectable Format Size: Vert1/3 B; Vert1/2 B; Vert2/3 B; Horiz1/2 B; Horiz1/4 B; TL Only format, switchable after freeze
	• Update mode: timed based on sweep

Quad Screen Display access from Split Screen

Virtual Convex

Display Annotation

Institution/Hospital Name

Date: 3 types selectable MM/DD/YY, DD/MM/YY, YY /MM/ DD

Time: 2 types selectable 24 hours, 12 hours

Operator Identification

Patient Name: First, Last, & Middle

Patient Identification: 64 characters

Gestational Age from LMP/EDD/GA/BBT

Power Output Readout	• MI: Mechanical Index
	• TIS: Thermal Index Soft Tissue
	• TIC: Thermal Index Cranial (Bone)
	• TIB: Thermal Index Bone

System Status (real-time or frozen)

Probe Orientation Marker: Coincides with orientation marking on the image monitor

System Overview (Continued)

Display Annotation (Continued)

Image Preview

Gray/Color Bar

Cine Gauge

Measurement Summary Window

Measurement Results Window: pre-settable display location

Probe Type

Application Name

Imaging Parameters by Mode (current mode/see below)

Focal Zone Markers

Body Pattern

B Scale Markers: 2 types; Depth/Width

M Scale Markers: 2 types; Time/Depth, Time

Image Management Menu: Menu, Delete, and Image Manager

Image Palette

Caps Lock: On/Off

System Messages Display

Trackball Functionality Status: Scroll, M&A (Measurement and Analysis), Position, Size, Scan Area Width, and Tilt

Battery Status

Biopsy Guide Line and Zone

Heart Rate

System Parameters

System Setup

User Programmable Preset Capability

Factory Default Preset Data

Factory Default Application Data

Languages setup for UI: Brazilian Portuguese, Chinese, Danish, Dutch, English, Finnish, French, German, Greek, Italian, Japanese, Norwegian, Russian, Spanish and Swedish

Languages for Manuals: Brazilian Portuguese, Chinese, Czech, English, French, German, Italian, Japanese, Spanish, Bulgarian, Croatian, Danish, Dutch, Estonian, Finnish, Greek, Hungarian, Indonesian, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Swedish, Kazakh, Traditional Chinese, and Turkish

Operation Error Message Display

System Boot Up: < 25 sec

Probe Loading: < 5 sec

B-Mode

Brightness mode. Real time displays of a two dimensional cross section of a three-dimensional soft tissue structure. Ultrasound echoes of different intensities are mapped to different gray scale or color values in the display.

Scan Parameters	
	• B/M Acoustic Output: 0-100%; 2%, 5%, 10% increments
	• Image Reverse: On/Off
	• B Colorize: 9 types
	• Thermal Index: TIC, TIS, TIB
	• Focus Number: probe dependent, 8 in maximum
	• Line Density: 5 increments: probe dependent
	• Frame Average: 6 increments
	• Edge Enhance: 7 increments
	• Angle (deg): probe dependent, 10-131 degrees
	• Gray Scale Map: 12 types
	• Gain: 0–90 dB, 1 dB increments
	• Dynamic Range: 36–96 dB, 3-6 dB increments
	• Harmonics: on/off
	• Virtual Convex: on/off
	• Depth: 0.5-33 cm: probe dependent
	• Focus Depth: 7-9 increments: probe dependent
	• Rejection: 6 increments
	• Frequency: 3-5 increments: probe dependent

Color Flow Mode (CFM) or Color Doppler

A real-time two-dimensional cross-section image of blood flow. Color gradient used to represent directional blood flow (velocity, variance, power and/or direction) prioritized over amplitude.

Scan Parameters	
	• Base Line
	• Invert: On/Off
	• CF/PDI Focus Depth: 6 steps default pre-settable
	• CF/PDI Acoustic Output: 0-100%; 2%, 5%, 10% increments
	• Packet Size: 8-24: probe dependent

System Parameters (Continued)

Color Flow Mode (CFM) or Color Doppler (Continued)

Scan Parameters	• Line Density: 5 increments
	• Frame Average: 7 increments
	• PRF: 0.3K–22K Hz: probe dependent
	• Spatial Filter: 6 steps
	• Gain: 0–40 dB, 0.5 dB increments
	• Wall Filter: 4 steps: application and probe dependent
	• Angle/Width (deg, mm): probe dependent
	• CF/PDI Vertical Size (mm): default pre-settable
	• CF/PDI Center Depth (mm): default pre-settable
	• CF/PDI Frequency: 2–4 steps: probe dependent
	• CF/PDI Focal Number: 1
	• Color Map: 14 types at most: application and probe dependent
	• Color Threshold: 10–100%, 10% increments

Power Doppler Imaging Mode (PDI)

Color gradient used to represent blood flow using amplitude shift vs. velocity shift (Color Doppler). Prioritizes amplitude over direction.

Scan Parameters	• PDI Map: 14 types
	• CF/PDI Acoustic Output: 0-100%; 2%, 5%, 10% increments
	• Packet Size: 8-24: probe dependent
	• Spatial Filter: 6 steps
	• Frame Average: 7 steps: probe dependent
	• PRF: 0.3K-11.4K Hz: depth dependent
	• Power Threshold: 10–100%, 10% increments
	• CF/PDI Vertical Size: default pre-settable
	• CF/PDI Center Depth: default pre-settable
	• CF/PDI Focal Number: 1
	• Gain: 0–40 dB, 0.5 dB increments
	• Wall Filter: 4 increments: probe dependent
	• CF/PDI Frequency: 2–4 increments: probe dependent

High-Res PDI (Optional)

Provides better hemodynamics visualization by combining effects of B-mode and color flow Doppler using a proprietary equation.

Scan Parameters	• High-Res PDI Map: 11 types
	• High-Res PDI Acoustic Output: 0-100%; 2%, 5%, 10% increments
	• Packet Size: 8-20: probe dependent
	• Spatial Filter: 6 steps
	• Frame Average: 7 steps: probe dependent
	• PRF: 0.2K-25K Hz: depth dependent
	• Power Threshold: 10–100%, 10% increments
	• High-Res PDI Focal Number: 1
	• Gain: 0–40 dB, 0.5 dB increments
	• Wall Filter: 4 increments: probe dependent
	• High-Res PDI Frequency: 2–3 increments: probe dependent

Available on 9L-RS, 12L-RS, L4-12t-RS, L8-18i-RS and L10-22-RS probes

M-Mode/Anatomical M-Mode (Optional)

Motion mode. Soft tissue structure is presented as scrolling display, with depth on the Y-axis and time on the X-axis. Anatomical M-Mode (AMM) Allows M-Mode on stored 2D cine clip. Facilitates arrhythmia assessment and cardiac measurements.

Scan Parameters	• Sweep Speed: 8 increments
	• M Color: 9 types
	• M/PW Display Format: V-1/3B, V-1/2B, V-2/3B, H-1/2B, H-1/4B, TL Only
	• B/M Acoustic Output: 0-100%; 2%, 5%, 10% increments
	• Rejection: 6 increments
	• Gray Scale Map: 12 types
	• M Gain: +/- 20 dB delta from B, 1 dB increments
	• Compression: 0.5-1.5, 0.1 increments

System Parameters (Continued)

PW/CW Mode

Pulse Wave Doppler (PW), Continuous Wave Doppler (CW) are used for displaying the speed, direction, and spectral content of blood flow at selected anatomical sites.

Scan Parameters	
	• Maximum and Minimum Velocity Scales
	• PW
	Max: 870 cm/s, 19,800 Hz
	Min: 15 cm/s, 700 Hz
	• CW
	Max: 1,460 cm/s, 40,000 Hz
	Min: 40 cm/s, 2,100 Hz
	• Gray Scale Map: 8 types
	• Base Line: 5–95%
	• SV Gate: 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16 mm: application dependent
	• Angle Correct: +/- 90°, 1° step
	• Spectral Color: 6 types
	• PW Sweep Speed: 8 increments
	• Invert: On/Off
	• M/PW Display Format: V-1/3B, V-1/2B, V-2/3B, H-1/2B, H-1/4B, TL Only
	• PW Acoustic Output: 0–100%, 10% increments
	• Spectral Averaging: 5 increments pre-settable
	• Rejection: 15 increments
	• Gain: 0-85 dB, 1 dB increments
	• Wall Filter: 5.5-5,000 Hz, 27 increments: probe and application dependent
	• PW Angle Steer: 0 +/- 10, 15, 20°
	• PRF: 700–19,800 Hz with PW, 2,100–40,000 Hz with CW
	• Sample Volume Depth: 33 increments default pre-settable
	• Audio Volume
	• PW Frequency 2–4 steps: probe dependent

M-Color Flow Mode

Overlays color on the M-mode trace

Coded Harmonic Imaging (Tissue Harmonics) (CHI)

Enhances near field resolution for improved small parts imaging as well as far field penetration. Diminishes low frequency amplitude noise and provides clarity to needle, anatomy and motion

TVI/TVD (Optional)

Tissue Velocity Imaging calculates and color-codes the velocities in tissues

Tissue Velocity Doppler provides spectral information for selected Doppler sample.

eSmart Trainer (Optional)

Provides modules showing basic scanning techniques with graphics of probe position, anatomy and example clinical images.

Patient Follow-up Tool with fusion (Optional)

For monitoring a patient condition over time. Automatically recalls the imaging parameters, comments and body patterns to be identical to your previous exam. Provides an alert if you use a different transducer than last time.

Works in B-Mode, Color Mode and PDI

Quick Save

Single button push sends single image or entire patient exam to memory stick or network

Report Writer

On-board reporting package automates report writing

Formats various exam results into a report suitable for printing or reviewing on a standard PC Exam results include patient info, exam info, measurements, calculations, images, and comments

Standard templates provided and allows for customization.

Needle Recognition Mode

Provides accurate display of the needle, anatomy and motion even in Color and Power Doppler.

Includes ability to adjust needle gain and angle.

Available on all linear and convex probes

System Parameters (Continued)

3D (Optional)

Acquisition of Color data provides Automatic rendering of B mode and Color Flow Mode images in 3D.

3D Landscape

3D Movie

Automatic Optimization

Auto Tissue Optimization: ATO

Auto Color Flow Optimization: ACO

Auto Spectrum Optimization: ASO

CrossXBeam

Provides 3, 5, 7 or 9 angles of spatial compounding

Live Side by Side DualView Display

Compatible with: Color Mode, PW, SRI-HD, Coded Harmonic Imaging, Virtual Convex

SRI-HD

Speckle Reduction Imaging provides multiple levels of speckle reduction

Compatible with/ B-Mode, Color, and 3D imaging

LOGIQ View (Optional)

Extended field of view imaging that allows viewing and measurement of anatomy that is larger than would fit in a single image possible. Requires manual sweep over anatomy of interest. Renders a panoramic image up to 60 cm, in long axis. It also allows you to see a wider field of view for comparing normal to abnormal anatomy.

Virtual Convex

Provides wider FOV in the far field

Available on linear probes

Virtual Apex

Provides wider FOV in the near field

Available on Sector probes

Measurements and Calculations

B-Mode Calcs

Distance

Circumference (Ellipse/Trace)

Area (Ellipse/Trace)

% Stenosis

Angle between 2 lines

Ratios

Depth from Probe Surface

M-Mode Calcs

Distance

Time

Slope

Heart Rate

Doppler Calcs

Velocity

Frequency

Time

Acceleration

Heart Rate

Auto Doppler Trace function with automatic calcs

Time averaged max/mean velocity

Ratios

PI (Pulsatility Index)

RI (Resistivity Index)

Vascular Measurements/Calculations

Upper/Lower

Artery/Vein

Summary Worksheet

Obstetrics Measurements/Calculations

Gestational Age Calculation

Multi-Gestational Calculation

EFW Calculation

Summary Worksheet

Fetal Trend Graph

Measurements and Calculations

(Continued)

Gynecology Measurements/Calculations

Ovarian Follicle Measurements

Summary Worksheet

Urology Measurements/Calculations

Volume Measurements

Summary Worksheet

Musculoskeletal Measurements/Calculations

Labeled measurements

Cardiac Measurements/Calculations

Ventricle, Atrium, Value Measurements

Auto IMT. Automated measurement of the intimae media thickness of common carotid artery

Summary Worksheet

Quantitative Flow Analysis (Optional)

Helps quantify and evaluate the blood flow within a region of interest, to assist with diagnosis and monitoring.

Probes (all optional)

C1-5-RS Wide Band Convex

Applications: Abdomen, Obstetrics, Gynecology, Urology, Pediatric/Neonatal, Nerve Block, MSK, ED (FAST, Pleural)

Imaging Frequency: 2.0–5.0 MHz

Biopsy Guide: Multi-angle, disposable with a reusable bracket

8C-RS Wide Band Microconvex

Applications: Abdomen, Basic Cardiac, Vascular, Pediatric/Neonatal, Small Parts, Nerve Block, MSK, Rheuma, ED (FAST, Pleural, Ophthalmic)

Imaging Frequency: 4.2–11 MHz

Biopsy Guide Not Available

E8C-RS Wide Band Microconvex

Applications: Obstetrics, Gynecology, Urology

Imaging Frequency: 4.2–10MHz

Biopsy Guide: Fixed Angle; Reusable Bracket, Disposable Sleeve

3Sc-RS Wide Band Phased Array

Applications: Abdomen, Obstetrics, Gynecology, Basic Cardiac, Vascular, Urology, Pediatric/Neonatal, ED (FAST, Pleural, Orbits)

Frequency: 1.7–4.0 MHz

Biopsy Guide Available: Multi Angle, Reusable Bracket, Disposable Sleeve.

6S-RS Wide Band Phased Array

Applications: Abdomen, Basic Cardiac, Vascular, Urology, Pediatric/Neonatal, ED (FAST, Pleural)

Imaging Frequency: 3.0–7.0 MHz

Biopsy Guide Not Available

9L-RS Wide Band Linear

Applications: Abdomen, Vascular, Pediatric/Neonatal, Small Parts, Nerve Block, MSK, Rheuma, ED (Fast, Pleural)

Imaging Frequency: 3.0–9.0 MHz

Biopsy Guide: Multi Angle; Reusable Bracket, Disposable Sleeve

12L-RS Wide Band Linear

Applications: Vascular, Pediatric/Neonatal, Small Parts, Nerve Block, MSK, Rheuma, ED (Fast, Pleural, Ophthalmic)

Imaging Frequency: 4.2–13.0 MHz

Biopsy Guide Multi Angle and Out-of-Plane; Reusable Bracket, Disposable Sleeve

L4-12t-RS Wide Band Linear With Buttons

Applications: Vascular, Pediatric/Neonatal, Small Parts, Nerve Block, MSK, Rheuma, ED (Fast, Pleural, Ophthalmic)

Imaging Frequency: 4.2–13.0 MHz

Biopsy Guide Multi Angle and Out-of-Plane; Reusable Bracket, Disposable Sleeve

Probes (all optional) (Continued)

L8-18i-RS Wide Band Linear

Applications: Vascular, Small Parts, Nerve Block, MSK, Rheuma, ED (Fast, Pleural)

Imaging Frequency: 6.7–18.0 MHz

Biopsy Guide Not Available

L10-22-RS Wide Band Linear

Applications: Vascular, Small Parts, Nerve Block, MSK, Rheuma

Imaging Frequency: 10.0–22.0 MHz

Biopsy Guide Not Available

6Tc-RS Wide Band Convex

Applications: Cardiac intra-operative

Imaging Frequency: 3–8 MHz

Biopsy Guide: Not Available

Safety Conformance

LOGIQ *e* is:

Certified to AAMI/ANSI ES60601-1:2005/(R)2012

Certified to CAN/CSA-C 22.2 No.60601-1:08 by an SCC accredited Test Lab

CE Marked to Council Directive 93/42/EEC on Medical Devices

Compliant with DIRECTIVE 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) requirement.

Conforms to the following standards:	
	• IEC 60601-1 Electrical medical equipment
	• IEC 60601-1-2 Electromagnetic compatibility
	• IEC 60601-1-6 Medical Electrical Equipment—Part 6: General Requirements for safety—Usability
	• IEC60601-2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
	• ISO 10993 Biological evaluation of medical devices
	• NEMA UD3 Acoustic output display (MI, TIS, TIB, TIC)

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 (NYSE: 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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