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LOGIQ 7

TruScan Imaging Technology

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Product Description

The LOGIQ 7 is a high performance multipurpose imaging system designed for abdominal, vascular, obstetrics, gynecology, cardiology, neonatal, urology, transcranial, and small parts applications.

System Architecture

TruScan Architecture – GE's exclusive, software-intensive platform provides unsurpassed computational power, image-manipulation capability, workflow flexibility and product upgrade-ability. The LOGIQ 7 excels in the following areas:
Image Quality superiority is created through the use of CrossBeam, SRI, Coded Techniques and world class transducers.
Raw Data is GE's-exclusive technology that allows a virtual rescan on archived images by applying the same scan controls available during the original exam.
Productivity features to make the LOGIQ 7 the most productive U/S system – including the new Automatic Optimization.
Ergonomics provide the most ergonomic U/S system available – including VoiceScan.

General Specification

Dimensions and Weight
- Height:
  - Minimum 1441 mm (57 in)
  - Maximum 1606 mm (63 in)
- Width: 599 mm (24 in)
- Depth: 999 mm (39 in)
- Weight: approx. 226 kg (498 lb.)

Electrical Power
- Voltage:100-120 VAC or 220-240 VAC
- Frequency: 50/60 Hz
- Maximum Power Consumption:
  1.2KVA with on-board peripherals,
  0.7KVA without peripherals

- Maximum Thermal Output:
  4095 BTU/hr with on-board peripherals,
  2390 BTU/hr without peripherals

Console Design
- 4 Active Probe Ports
- Integrated HDD (80GB)
- Integrated DVD Multi Drive
- KBD/Monitor Up-Down Mechanism (180mm adjustable in height)
- On-board Storage for Peripherals
  - Digital B/W-printer, Digital color printer, VCR, DVD video recorder
- Wheels
  - Wheel diameter:
    Front/Rear: 150 mm
  - 4 rotating flexible wheels with protection cover
  - Integrated locking mechanism that provides rolling lock and caster swivel lock
- Probe Holders, Removable for Cleaning and Washing with Integrated Cable Management
- Gel Holder, Removable for Cleaning
- Air Filters, Easily Removable
- Rear Storage Cover for Peripheral Connectors and Cables
- Rear Handle

User Interface

Operator Keyboard
- Keyboard Width: 599 mm (24 in)
- Keyboard Height:
  785-950 mm (31-37 in), adjustable
- Full Alphanumeric Keyboard
- Ergonomic Hard Key Layout
- Interactive Back-Lighting
- Indicator Lights Identify Activated Keys
- Integrated Recording Keys for Remote Control of Up to 4 Peripheral or DICOM Devices
- 10 TGC Pods, with Re-mapping Functionality at Any Depth
- External Microphone Connecter
- Task Light

Touch Screen
- 26cm(10.4 in) High Resolution Color LCD Screen with VGA Format
- Interactive Dynamic Software Menu
- Brightness Adjustment
- User-Configurable Layout, in Measurement, Annotation, and Body Pattern Menus

Monitor
- 17 inch Non-Interlace, High-Resolution, and Flat Display
- SVGA Format:
  - Display size: 800x600
  - Recording area: 640x480
- Tilt/Rotate Adjustable
  - Tilt angle: up/down 10°
  - Rotate angle: right/left 90°
- Height Adjustable (with keyboard) : 1255-1420 mm (49-56 in) at center of monitor
- Digital Brightness/Contrast Adjustment
- Integrated Hi-Fi Speakers
- Integrated Microphone

System Overview

Applications
- Abdominal
- Obstetrical
- Gynecological
- Cardiac
- Musculoskeletal
- Vascular
- Urological
- Small Parts and Superficial
- Breast
- Pediatric and Neonatal
- Orthopedic
- Transcranial
- Intraoperative

Scanning Methods
- Electronic Sector
- Electronic Convex
- Electronic Linear

Transducer Types
- Sector Phased Array
- Convex Array
- Microconvex Array
- Linear Array
- Matrix Arrays
- Single CW (Pencil) Probes
- Multi-plane Sector Phased Array
- Bi-plane Microconvex Arrays

Operating Modes
- B-Mode
- Coded Harmonic Imaging
- M-Mode
- Color Flow Mode (CFM)
- Power Doppler Imaging (PDI) with Directional Map
- PW Doppler with High PRF
- M-Color Flow Mode
- Anatomical M-Mode
- Anatomical M-Color Mode
- B-Flow Mode (option)
- B-Flow Color Mode (option)
- Coded Contrast Imaging (option)
- CW Doppler Mode (option)
- PFD Mode (option)
- Tissue Velocity Imaging (TVI) Mode (option)
- Curved Anatomical M-Mode (option)

System Standard Features
- Sate-of-the-art User Interface with High Resolution 10.4 inch Color LCD Touch Panel
- Realtime Triplex Mode at Any Depth and Any PRF
- Automatic Optimization
  - Auto Tissue Optimization: ATO
  - Auto Spectrum Optimization: ASO
  - Auto Color Optimization: ACO
- Coded Harmonic Imaging
- Coded Excitation
- Virtual Convex
- Anatomical M-Mode
- Patient Information Database
- Image Archive on CD/DVD and Hard Drive
- Easy Backup to Media for data security
- Easy 3D (Freehand acquisition with basic features) with 3D Movie
- TruAccess, Raw Data Processing and Analysis
- Realtime Automatic Doppler Calcs
- OB Calcs
- Fetal Trending
- Multi Gestational Calcs
- Hip Dysplasia Calcs
- Gynecological Calcs
- Vascular Calcs
- Cardiac Calcs
- Urological Calcs
- Renal Calcs
- InSite Capability
- iLinq Capability
- On-board electronic documentation
- Standby Mode

System Options
- LOGIQ View
- Advanced 3D, with 3D Landscape
- B-Flow, and B-Flow Color
- Coded Contrast Imaging
- DICOM 3.0 Connectivity
- CrossBeam (spatial compounding)
- Report Writer (on-board reporting)
- Stress Echo Package
- PFD (Pulsatile Flow Detection)
- Speckle Reduction Imaging (SRI)
- VoiceScan
- Tissue Velocity Imaging (TVI), with Curved Anatomical M-Mode and Q-Analysis
- Physio Input Panel for ECG, PCG, Aux
- ECG Cable
- PCG microphone
- TV Probe Holder
- 3-Pedal Foot Switch, with Programmable Functionality
- Steerable CW/Single CW Board
- Pencil Probe Adapter
- Extended Cine Memory

Media & Peripheral Options
- Integrated 3.5 inch MO Drive, Supports 128, 230, 520, 640 MB, or 1.3 GB Disks
- Integrated Mounting Kits and Remote Controls Provided for
  - Analog B/W thermal printer
  - Analog A6 or A5 Color thermal printer
  - Digital B/W thermal printer
  - Digital A6 Color thermal printer
  - Digital A5 Color thermal printer
  - Analog S-VHS video cassette recorder
  - DVD video recorder
- Video and Audio Connections Provided for Other Devices such as Multi-Format Cameras, Laser Cameras, and Other Peripherals

Display Modes
- Live and Stored Display Format: Full size and split screen - both w/ thumbnails. For Still and CINE
- Review Image Format: 4x4, and "thumbnails". For Still and CINE
- Simultaneous Capability
  - B/PW
  - B/CFM or PDI
  - B/M
  - B + CFM/M
  - Realtime Triplex Mode (B + CFM or PDI/PW)
  - B-Flow + PW (option)
  - Dual B (B/B)
  - Dual B + CFM or PDI
  - B/CW (option)
  - Realtime Triplex Mode (B + CFM or PDI/CW, option)
  - B/PFD (option)
- Selectable Alternating Modes
  - B/M
  - B/PW
  - B + CFM/M
  - B + CFM (PDI)/PW
  - B-Flow + PW (option)
  - 3D – Mode
  - 3D – Color Mode (option)
  - B/CW (option)
  - B + CFM (PDI)/CW (option)
  - B + PFD/PW (option)
- Multi Image Split Screen
  - Live and/or frozen
  - B + B/CFM or PDI
  - B+B/PFD (option)
  - Independent Cine playback
  - Quad screen format
- Zoom: Write/Read/Pan
- Colorized Image
  - Colorized B
  - Colorized M
  - Colorized PW
  - Colorized CW (option)
  - Colorized B-Flow (option)
- Time line Display
  - Independent Dual B/PW Display
  - Display Formats:
    Top/ Bottom selectable format (Size: 1/2:1/2; 1/3:2/3; 2/3:1/3)
    Side/Side selectable format (1/2:1/2; 1/3:2/3; 0:1)
    Switchable after freeze
- Virtual Convex

- CrossBeam (option)
- Tissue Velocity Imaging (TVI) Mode (option)

Display Annotation
- Patient Name: First, Last, & Middle name each store 27 characters. Up to 27 total characters displayed.
- Patient ID: 31 Characters. Up to 27 total characters displayed.
- Age, Sex and Birth Date (optional)
- Hospital Name: 23 Characters.
- Date: 2 Types selectable MM/DD/YY, DD/MM/YY
- Time: 2 types selectable
- 24 hours, 12 hours
- Gestational Age from LMP/EDD/GA/BBT
- Probe Name
- Gray Map names
- Probe Orientation
- Depth Scale Marker
- Lateral Scale Marker
- Focal Zone Markers
- Image Depth
- Zoom Depth
- B-Mode
  - Gain
  - Dynamic Range
  - Imaging Frequency
  - Edge Enhance
  - Frame Averaging
  - Gray Map
  - ATO On/Off
- M-Mode
  - Gain
  - Dynamic Range
  - Time Scale
- Doppler Mode
  - Gain
  - Angle
  - Sample Volume Depth and Width
  - Wall Filter
  - Velocity and/or Frequency Scale
  - Spectrum Inversion
  - Time Scale
  - PRF
  - Doppler Frequency
- Color Flow Mode
  - Line Density
  - Frame Averaging
  - Packet Size
  - Color Scale
  - Color Velocity Range and Baseline
  - Color Threshold Marker
  - Color Gain
  - PDI
  - Color Scale Inversion
  - Color Doppler Frequency
- TGC Curve
- Acoustic Frame Rate
- Cine Frame Number
- VCR Counter
- VCR Status
- VCR Playback Counter
- Body Pattern
- Application Name
- Measurement Results
- Operator Message
- Displayed Acoustic Output
  - TIS: Thermal Index Soft Tissue
  - TIC: Thermal Index Cranial (Bone)
  - TIB: Thermal Index Bone
  - MI: Mechanical Index
- % of Power output
- Biopsy Guide Line and/or Zone
- Heart Rate

General System Parameters

System Setup
- Pre-programmable Categories
- User Programmable Preset Capability
- Factory Default Preset Data
- Languages: English, French, German, Spanish, Italian, Portuguese, Russian, Greek, Swedish, Danish, Dutch, Finnish, Norwegian
- OB Report Format: 5 Types, Tokyo Univ., Osaka Univ., USA, Europe, and ASUM
- EFBW: 10 types, Japan, USA and Europe (Tokyo Univ., Osaka Univ., Tokyo Shinozuka, JSUM, German, Shephard, Merz, Hadlock/Shephard, Williams, Brenner)
- 348 Pre-defined Annotations and User Programmable Libraries/Annotations
- Body Patterns: 134 human types plus 14 animal types
- Customized Comment Home Position

Complete User Manual available on board through Help (F1)

User Manual and Service Manual are included on CD with each system. A printed Manual is available upon request.

CINE Memory/Image Memory
- CINE Memory:
  - 128MB: standard
  - 640MB: with Extended Cine Memory option
- Dual Image CINE Display
- Quad Image CINE Display
- CINE Gauge and CINE Image Number Display
- CINE Review Loop
- CINE Review Speed: 9 types (1/1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9)
- Selectable CINE Sequence for CINE Review
- Measurements, Calculations and Annotations on CINE Playback
- Scrolling Timeline Memory
- Digital Continuous CINE Capture over 180 sec (option)

Image Storage
- On-board database of patient information from past exams
- Storage Format: DICOM/Raw Data
- DICOM Still Image Storage Size:
  - Gray Image: ~300K to ~1.3 MB
  - Color Image: ~900K to 1.9 MB
- Multiframe
- Display Format: Full size, 4x4, and "thumbnails"
- Live image and stored image side-by-side display
- MO Disk Storage: 128, 230, 540, 640 MB or 1.3 GB
- CD-R storage: 650, 700 MB
- DVD storage: -R (4.7GB) and - RAM (9.4GB/Double sided Cartridge/Non-cartridge)
- Conversion to JPEG, AVI and WMV file formats
- Hard Drive Image Storage: 60 GB

Connectivity
- Ethernet network connection
- RS-232 serial data output (need a converter cable)
- DICOM 3.0 (option)
  - Verify
  - Print
  - Store
  - Modality Worklist
  - Storage Commitment
  - Modality Performed Procedure Step (MPPS)
  - Media Exchange
  - Off network / mobile storage queue
  - Query/Retrieve; supported on Centricity and other compatible vendors
  - Structured Reporting; compatible with LOGIQworks
  - Public SR Template
  - Media Store of SR
  - iLinq capability

VoiceScan (optional)
- Provides for Voice control of scanner
- Over 150 voice commands
- Voice Profile per user
- Separate training file per user
- Training file moveable between systems
- Wired microphone attached as USB device

- Wireless microphone
  - 518-550MHz adjustable range
  - 30mW output power

Scanning Parameters

- Digital Beamformer
- 7168 Maximum Virtual Channels
  Displayed Imaging Depth: 0 – 30 cm
- Minimum Depth of Field: 0 –1cm (probe dependent)
- Maximum Depth of Field: 0 – 30 cm (probe dependent)
- Transmission Focus
  - 1 – 8 Focus Points Selectable (probe and application dependent)
  - Focal Zone Position, up to 19 steps
- Transmission Apodization
- Dual Beamforming in B-Mode
- Quad Beamforming in CFM
- Continuous Dynamic Receive Focus/Aperture
- Multi-Frequency/Wideband Technology
- 256 Shades of Gray
- 16,777,216 Hues of Color
- 172 dB Dynamic Range
- Adjustable Field of View (FOV)
- Image Reverse: Right/Left
- Image Rotation: 2 steps
  Rotation: 0°, 180°

B-Mode
- B/M Acoustic Output: 0 – 100%, 2% step
- Image Reverse: On/Off
- B Color: 8 types
- Thermal Index: TIC, TIS, TIB
- Softener: 4 steps
- Focus Number: 8 steps
- Focus Width: 3 types
- Range Focus: On/Off
- Compression: 0.5 – 1.5, 0.1 step
- Line Density: 4 steps
- Line Density Zoom: 4 steps
- Suppression: 6 steps
- Frame Average: 8 steps
- Edge Enhance: 6 steps
- Scanning Size (FOV or Angle): probe dependent, see probe specifications
- Gray Scale Map: 23 types
- Gain: 0 – 98 dB, 2 dB step
- Dynamic Range: 30 – 120 dB, 3 dB step
- Depth: 1 – 30 cm, 1 cm step, depend on probe
- Rejection: 6 steps
- Frequency: Up to 5 steps, depend on probe
- Dual Beam: On/Off pre-settable
- Auto Line Density: On/Off pre-settable
- Diff: On/Off
- Steered Linear: +/- 15°

Color Flow Mode
- Base Line: 0 – 100 %, 10 % step
- Invert: On/Off
- CF/PDI Focus Depth: default pre-settable for 0 – 100 % of ROI in depth, 10 % step
- CF/PDI Flash Suppression: 2 steps
- CF/PDI Acoustic Output: 0 – 100%, 10% step
- CF/PDI Angle Steer: 0, +/- 20°
- Packet Size: 5 – 16, dependent on probe/application
- Line Density: 5 steps
- Line Density Zoom: 5 steps
- Frame Average: 7 steps
- PRF: 280 Hz – 19600 Hz
- Spatial Filter: 6 steps
- Gain: 0 – 40 dB, 0.5 dB step
- Wall Filter:7 steps depend on probe/application
- Scanning Size (FOV or Angle): probe dependent
- CF/PDI Vertical Size (mm) of ROI: default pre-settable
- CF/PDI Center Depth (mm) of ROI: default pre-settable
- CF/PDI Frequency: Up to 2 steps, depend on probe
- Color Map: 20 types depend on application
- Transparent: 5 steps
- Color Threshold: 0 – 100 %, 5 % step
- Arbitration Threshold: 15 steps pre-settable
- Auto Line Density: On/Off pre-settable
- PW/CF Ratio: 1, 2, 4
- Accumulation: 6 steps

Power Doppler Imaging
- PDI Map: 13 types
- CF/PDI Flash Suppression: 2 steps
- CF/PDI Focus Depth: default pre-settable for 0 – 100 % of ROI in depth, 10 % step
- CF/PDI Acoustic Output: 0 – 100%, 10% step
- CF/PDI Angle Steer: 0, +/- 20°
- Packet Size: 5 – 16, dependent on probe/application
- Spatial Filter: 6 steps
- Frame Average: 7 steps
- PRF: 280 Hz – 19600 Hz
- Power Threshold: 0 – 100 %, 5 % step
- Arbitration Threshold: 15 steps pre-settable
- Gain: 0 – 40 dB, 0.5 dB step
- Wall Filter: 7 steps depend on probe/application
- CF/PDI Frequency: Up to 2 steps, depend on probe
- Auto Line Density: On/Off pre-settable
- Transparent: 5 steps
- Invert: On/Off
- Accumulation: 6 steps

M-Mode
- Sweep Speed: 8 steps
- M Color: 8 types
- M/PW Display Format: V-1/3B, V-1/2B, V-2/3B, H-1/2B, H-1/4B, TLOnly
- B/M Acoustic Output: 0 – 100 %, 2 % step
- Rejection: 6 steps
- Dynamic Range: 30 – 120 dB, 3 dB step
- Edge Enhance: 6 steps
- Gray Scale Map: 23 types
- M Gain: 0 – 98 dB, 2 dB step

Anatomical M-Mode
- M-mode cursor adjustable at any plane
- Can be activated from a CINE loop from a live or stored image
- Available with Color Flow Mode
- M & A capability

PW/CW-Mode
- Maximum and Minimum Velocity Scales
  - Max: 10 m/sec
  - Min: 5 cm/sec
- Gray Scale Map: 4 types
- Dynamic Range: 24 – 60, 4 dB step
- Base Line: 5 – 95 %, 11 steps
- SV Gate: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16 mm
- Angle Correct: +/- 90°, 1° step
- Spectral Color: 5 types
- PW Sweep Speed: 8 steps
- Invert: On/Off
- M/PW Display Format: V-1/3B, V-1/2B, V-2/3B, H-1/2B, H-1/4B, TLOnly
- Duplex: On/Off
- PW Acoustic Output: 0 – 100 %, 10 % step
- Spectral Averaging: 5 steps
- Time Resolution: 4 steps
- PW/CF Ratio: 1, 2, 4
- Rejection: 15 steps
- Gain: 0 – 32 dB, 1 dB step
- Wall Filter: 5 – 1500 Hz, 22 steps, depend on probe/application
- PW Angle Steer: 0, +/- 5, 10, 15, 20°
- PRF: 640 – 30000 Hz with PW, 50000 Hz with CW
- Sample Volume Depth: 29 steps default pre-settable
- CW-Mode (option) is Available on the Following Probes
  - M3S
  - 3S
  - 7S
  - 10S
  - 6T

- P2D
- P6D

Coded Harmonic Imaging
- Available on the Following Probes
  - 3.5C
  - 3.5CS
  - 3C
  - M7C
  - E8C
  - 8C
  - BE9C
  - M3S
  - 3S
  - 7S
  - M12L
  - 7L
  - 10L
  - i12L
  - T739
  - 6T
- Softener: 4 steps
- Line Density: 4 steps
- Line Density Zoom: 4 steps
- Suppression: 6 steps
- Edge Enhance: 6 steps
- Gray Scale Map: 23 types
- Gain: 0 – 98 dB, 2 dB step
- Dynamic Range: 30 – 120 dB, 3 dB step
- Rejection: 6 steps
- Auto Line Density: On/Off pre-settable
- Frequency: Up to 5 steps, depend on probe

Coded Excitation
- Available on M7C probe

Virtual Convex
- Provides a Convex Field of View for Linear and Sector probes
- Available on the Following Probes
  - 10L
  - M12L
  - 7L
  - 10S
  - i12L
  - T739
  - M3S
  - 7S
  - 6T

B-Flow (option)
- Available on 10L, M12L, 7L, 3.5C, 3.5CS and T739 Probes
- Background: On/Off
- Sensitivity/PRI: 14 steps
- Line Density: 4 steps
- Edge Enhance: 6 steps
- Frame Average: 8 steps
- Gray Scale Map: 23 types
- Dynamic Range: 30 – 120 dB, 3 dB step
- Rejection: 6 steps
- Gain: 0 – 98 dB, 2 dB step
- Auto Line Density: On/Off pre-settable
- Dual Beam: On/Off pre-settable
- B-Flow Color
- Accumulation: 6 steps

Coded Contrast Imaging (option)
- Coded Harmonic Angio: Available on 3.5C, 3.5CS, M3S, 3S and 7L, 10L probes
  - Tissue Background Selection: 4 steps
- TruAgent Detection: Available on 3.5C, 3.5CS, M3S, 3S and 7L, 10L probes
  - 2 frequencies on 3.5C and 3.5CS, 1 on M3S,3S, 7L, and 10L
- Coded Phase Inversion: 2 types, Available on 3.5C, 3.5CS, M3S, 3S and 7L probes
  - Tissue Background Selection: 4 steps
- TAD PI: Coded Phase Inversion Color, Available on 3.5C and 3.5CS
- Max Enhancement: On/Off
- Gray Scale Map: 21 types
- Contrast Clock Display
- Time Trigger Scan: 0.3, & 0.5 – 10 sec, 0.5 sec step
- Time Intensity Curve Analysis
- Accumulation: 6 steps
- SRI
-

LOGIQView (option)
- Available on all probes
- Extended Field of View Imaging
- For use in B-Mode
- LOGIQView Status
- Auto detection of scan direction
- Pre or post-process zoom up to 10X
- Rotation
- Auto best fit on monitor
- Measurements in B-Mode
- Up to 60 cm scan length

Advanced 3D (options)
- Acquisition of Color data
- Automatic rendering
- 3D Landscape technology
- 3D Movie
- Main Mode

CrossBeam (option)
- Provides Spatial Compounding
- Available on the linear and convex probes
  - M12L
  - 10L
  - 7L
  - i12L
  - T739
  - 3.5C
  - 3.5CS
  - M7C
  - 8C
  - E8C
  - BE9C
- Provides 3, 5 or 7 Angles for Compounding on Linear probes, 3 or 5 Angles on Convex probes
- Side by Side Display with Non-compounding Image
- Compatible with Coded Harmonic Imaging

Stress Echo Package (option)
- Advanced and flexible stress-echo examination capabilities
- Provides exercise and pharmacological protocol templates
  - 6 default templates
- Template editor for user configuration of existing templates or creation of new templates
- Reference scan display during acquisition for stress level comparison (dual screen)
  - Baseline level/Previous level selectable
- Raw data continuous capture
  - Over 180 sec available
- Wall motion scoring (bulls-eye and segmental)

PFD (option)
- Available on all probes
- PFD Map: 4 types
  - PFD directional / pulsatile: 2 types
  - PFD pulsatile / non pulsatile: 2 types
- PFD Type: 6 steps
- PFD Scale: 1-106, 3 step
- CF/PDI/PFD Flash Suppression: 2 steps
- CF/PDI/PFD Focus Depth: default pre-settable for 0 – 100 % of ROI in depth, 10 % step
- CF/PDI/PFD Acoustic Output: 0 – 100%, 10% step
- CF/PDI/PFD Angle Steer: 0, +/- 20°
- Packet Size: 5 – 16, dependent on probe/application
- Spatial Filter: 6 steps
- Frame Average: 7 steps
- PRF: 280 Hz – 19600 Hz
- Power Threshold: 0 – 100 %, 5 % step
- Arbitration Threshold: 15 steps pre-settable
- Gain: 0 – 40 dB, 0.5 dB step
- Wall Filter: 3 steps
- CF/PDI/PFD Frequency: Up to 2 steps, depend on probe
- Auto Line Density: On/Off pre-settable
- Transparent: 5 steps
- Invert: On/Off
- Accumulation: 6 steps

SRI (option)
- Speckle Reduction Imaging
- Provides 6 levels of speckle reduction
- Side by Side Display
- Compatible with ALL linear, convex and sector transducers
- Compatible with ALL scanning mode
- Side by Side Display with Non-compounding Image

TVI (option)
- Myocardial Doppler Imaging with color overlay on tissue image
- Available on the sector probes
- Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information
- Curved Anatomical M-mode: free (curved) drawing of M-mode generated from the cursor independent from the axial plane
- Q-Analysis: Multiple Time -Motion trace display from selected points in the myocardium

Pre-Processing
- Write Zoom up to 8x
- B/M-Mode
  - Gain
  - TGC
  - Dynamic Range
  - Acoustic Output
  - Transmission Focus Position
  - Transmission Focus Number
  - Transmission Focus Width
  - Imaging Frequency
  - Edge Enhancement
  - Line Density Control
  - Live Anatomical M-mode
- PW/CW-Mode
  - Gain
  - Dynamic Range
  - Acoustic Output
  - Doppler Frequency
  - Velocity Scale (PRF)
  - PW/CF Ratio
  - Wall Filter
  - Time Resolution
  - Sample Volume Gate for PW-Mode
    Length
    Depth
- Color Flow Mode
  - CFM Gain
  - CFM Velocity Scale (PRF), or PFD Scale (PRF)
  - Acoustic Output
  - CFM Frequency
  - Wall Filter
  - Packet Size
  - CFM Spatial Filter
  - CFM Line Density
  - CFM Regression Filter
  - Accumulation

Post-Processing w/ TruAccess (Raw Data)
- SRI – Selectable level of Speckle Reduction Imaging
- Max Read Zoom to 8x
- B/M-Mode
  - ATO (Auto Tissue Optimization)
  - Image Reverse
  - Image Rotation
  - Gray Map
  - Colorized B and M
  - Post Gain
  - Compression
  - Rejection
  - Frame Averaging
  - B Softener
  - Suppression
  - Sweep Speed for M-Mode
  - Anatomical M Mode
- PW/CW-Mode
  - ASO (Auto Spectral Optimization)
  - Base Line Shift
  - Gray Map
  - Post Gain
  - Compression
  - Rejection
  - Spectral Averaging
  - Colorized D
  - Display Format
  - Sweep Speed
- Color Flow Mode
  - ACO (Auto Color Optimization)
  - Base Line Shift
  - Color Map
  - Post Gain
  - Frame Averaging
  - CFM Display Threshold
  - Angle Correct (PW mode)
  - Quick Angle Correct (PW mode)
  - Auto Angle Correct (PW mode)
  - Spectral Invert for Color and Doppler
- 3D reconstruction from a stored CINE loop
- Anatomical M-Mode
- Curved Anatomical M-Mode
- Accumulation
- Cine Capture

Physiological Input Panel (Option)
- Physiological Input
  - ECG, 1 channel
  - PCG, 1 channel
  - AUX, 2 channel
- Dual R-Trigger
- Pre-settable ECG R Delay Time
- Pre-settable ECG Position
- Adjustable ECG Gain Control
- Pre-settable PCG Position
- Adjustable PCG Gain Control
- Pre-settable AUX Position
- Adjustable AUX Gain Control
- Automatic Heart Rate Display

Measurements / Calculations

General B-Mode
- Depth & Distance
- Circumference (Ellipse / Trace)
- Area (Ellipse / Trace)
- Volume (Ellipsoid)
- % Stenosis (Area or Diameter)
- Angle between two lines

General M-Mode
- M-Depth
- Distance
- Time
- Slope
- Heart Rate

General Doppler Measurements/Calculations
- Velocity
- Time
- A/B Ratio (Velocities / Frequency Ratio
- PS (Peak Systole)
- ED (End Diastole)
- PS/ED (PS/ED Ratio)
- ED/PS (ED/PS Ratio)
- AT (Acceleration Time)
- ACCEL (Acceleration)
- TAMAX (Time Averaged Maximum Velocity
- Volume Flow (TAMEAN and Vessel Area)
- Heart Rate
- PI (Pulsatility Index)
- RI (Resistivity Index)

Real-time Doppler Auto Measurements / Calculations
- PS (Peak Systole)
- ED (End Diastole)
- MD (Minimum Diastole)
- PI (Pulsatility Index)
- RI (Resistivity Index)
- AT (Acceleration Time)
- ACC (Acceleration)
- PS/ED (PS/ED Ratio)
- ED/PS (ED/PS Ratio)
- HR (Heart Rate)
- TAMAX (Time Averaged Maximum Velocity)
- PVAL (Peak Velocity Value)
- Volume Flow (TAMEAN and Vessel Area)

OB Measurements/Calculations

- Gestational Age by:
  - GS (Gestational Sac)
  - CRL (Crown Rump Length)
  - FL (Femur Length)
  - BPD (Biparietal Diameter)
  - AC (Abdominal Circumference)
  - HC (Head Circumference)
  - APTD x TTD (Anterior/Posterior Trunk Diameter by Transverse Trunk Diameter)
  - LV (Length of Vertebra)
  - FTA (Fetal Trunk Cross-sectional Area)
  - HL (Humerus Length)
  - BD (Binocular Distance)
  - FT (Foot Length)
  - OFD (Occipital Frontal Diameter)
  - TAD (Transverse Abdominal Diameter)
  - TCD (Transverse Cerebellum Diameter)
  - THD (Thorax Transverse Diameter)
  - TIB (Tibia Length)
  - ULNA (Ulna Length)
- Estimated Fetal Weight (EFW) by:
  - AC, BPD
  - AC, BPD, FL
  - AC, BPD, FL, HC
  - AC, FL
  - AC, FL, HC
  - AC, HC
- Calculations and Ratios
  - FL/BPD
  - FL/AC
  - FL/HC
  - HC/AC
  - CI (Cephalic Index)
  - AFI (Amniotic Fluid Index)
- Measurements / Calculations by: Jeanty, Merz, Tokyo University, Mercer, Hansmann, Erickson, Hill, Shephard, Hadlock, Hohler, Campbell
- Fetal Graphical Trending
- Growth Percentiles
- Multi-Gestational Calculations (4)
- Fetal Qualitative Description (Anatomical survey)
- Fetal Environmental Description (Biophysical profile)
- Programmable OB Tables
- Over 20 selectable OB Calcs
- Expanded Worksheets

GYN Measurements/Calculations

- Right Ovary Length, Width, Height
- Left Ovary Length, Width, Height
- Uterus Length, Width, Height
- Ovarian Volume
- ENDO (Endometrial thickness)
- Ovarian RI
- Uterine RI
- Follicular measurements
- Summary Reports

Vascular Measurements/Calculations

- SYS DCCA (Systolic Distal Common Carotid Artery)
- DIAS DCCA (Diastolic Distal Common Carotid Artery)
- SYS MCCA (Systolic Mid Common Carotid Artery)
- DIAS MCCA (Diastolic Mid Common Carotid Artery)
- SYS PCCA (Systolic Proximal Common Carotid Artery)
- DIAS PCCA (Diastolic Proximal Common Carotid Artery)
- SYS DICA (Systolic Distal Internal Carotid Artery)
- DIAS DICA (Systolic Distal Internal Carotid Artery)
- SYS MICA (Systolic Mid Internal Carotid Artery)
- DIAS MICA (Diastolic Mid Internal Carotid Artery)
- SYS PICA (Systolic Proximal Internal Carotid Artery)
- DIAS PICA (Diastolic Proximal Internal Carotid Artery)
- SYS DECA (Systolic Distal External Carotid Artery)
- DIAS DECA (Diastolic Distal External Carotid Artery)
- SYS PECA (Systolic Proximal External Carotid Artery)
- DIAS PECA (Diastolic Proximal External Carotid Artery)
- VERT (Systolic Vertebral Velocity)
- SUBCLAV (Systolic Subclavian Velocity)
- Summary Reports

Cardiac Measurements/Calculations

- Cardiac calculation package including extensive measurements and display of multiple repeated measurements
- Parameter annotation follow ASE standard

* See Supplement for details

Report Writer (Option)

- On-board reporting package automates report writing
- Formats various exam results into a report suitable for printing to a windows printer or reviewing on a standard PC
- Exam results include patient info, exam info, measurements, calculations, images, comments and diagnosis
- Standard templates provided
- Customizable templates

Probes

- 3.5C Wide Band Convex Probe
  - Applications: Abdomen, OB Gyn, Urology, Vascular
  - Probe Band Width : 2.0 – 5.5 MHz
  - Number of Element: 128
  - Convex Radius : 40 mmR
  - FOV(Max) : 68°
  - Physical Foot Print : 53 x 18 mm
  - B-mode Imaging Frequency : 2.0, 3.0, 4.0, 5.0, 5.5 MHz
  - Harmonic Frequency : 4.0, 4.5, 5.0, 5.2, 5.5 MHz
  - Doppler Frequency : 2.0, 3.3 MHz
  - Biopsy Guide Available : Single Angle, Reusable
- 3.5CS Wide Band Convex Probe
  - Applications: Abdomen, OB Gyn, Urology, Vascular
  - Probe Band Width : 2.0 – 5.5 MHz
  - Number of Element: 128
  - Convex Radius : 40 mmR
  - FOV(Max) : 68°
  - Physical Foot Print : 53 x 13 mm
  - B-mode Imaging Frequency : 2.0, 3.0, 4.0, 5.0, 5.5 MHz
  - Harmonic Frequency : 4.0, 4.5, 5.0, 5.2, 5.5 MHz
  - Doppler Frequency : 2.0, 3.3 MHz
  - Biopsy Guide Available : Single Angle, Reusable
- 3C Wide Band Convex Probe
  - Applications: Abdomen, OB Gyn, Urology
  - Probe Band Width : 2.0 – 5.0 MHz
  - Number of Element: 128
  - Convex Radius : 55 mmR
  - FOV(Max) : 58°
  - Physical Foot Print : 60 x 14 mm
  - B-mode Imaging Frequency : 2.0, 3.0, 4.0, 5.0 MHz
  - Harmonic Frequency : 4.0, 5.0 MHz
  - Doppler Frequency : 2.5, 3.3 MHz
  - Biopsy Guide Available : Multi Angle, Reusable
- 5C Convex Probe
  - Applications: Abdomen, OB Gyn, Urology
  - Probe Band Width : 3.0 – 8.0 MHz
  - Number of Element: 128
  - Convex Radius : 40 mmR
  - FOV(Max) : 73°
  - Physical Foot Print : 54 x 13 mm
  - B-mode Imaging Frequency : 4.0, 5.0, 6.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - Biopsy Guide Available : Multi Angle, Reusable

- M7C Matrix Array Wide Band Convex Probe
  - Applications: Abdomen, OB Gyn, Pediatrics
  - Probe Band Width : 3.0 – 8.0 MHz
  - Number of Element: 960
  - Convex Radius : 40 mmR
  - FOV(Max) : 63°
  - Physical Foot Print : 55 x 18 mm
  - B-mode Imaging Frequency : 6.0, 7.0, 8.0 MHz
  - Harmonic Frequncy : 6.0, 7.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - Biopsy Guide Available : Multi Angle, Reusable
- E8C Wide Band Microconvex Probe
  - Applications: OB Gyn, Urology, Endocavity
  - Probe Band Width : 4.0 – 11.0 MHz
  - Number of Element: 128
  - Convex Radius : 11 mmR
  - FOV(Max) : 133°
  - Physical Foot Print : 23 x 10 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 8.0, 10.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - Biopsy Guide Available : Single Angle, Disposable and Reusable
- 8C Wide Band Microconvex Probe
  - Applications: Neonatal, Pediatrics
  - Probe Band Width : 4.0 – 11.0 MHz
  - Number of Element: 128
  - Convex Radius : 11 mmR
  - FOV(Max) : 133°
  - Physical Foot Print : 23 x 10 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 8.0, 10.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - Biopsy Guide Available : None
- M3S Matrix Array Wide Band Phased Array Sector Probe
  - Applications: Cardiac, Transcranial, Abdomen
  - Probe Band Width: 1.5 – 4.2 MHz
  - Number of Element: 192
  - FOV(Max) : 90°
  - Physical Foot Print : 23 x 16 mm
  - B-mode Imaging Frequency : 2.0, 2.5, 3.0 MHz
  - Harmonic Frequency : 3.0, 3.2, 3.6, 4.0, 4.2 MHz
  - Doppler Frequency : 2.0, 2.5 MHz
  - CW Doppler Frequency : 2.0 MHz
  - Biopsy Guide Available : Multi Angle, Reusable
- 3S Wide Band Phased Array Sector Probe
  - Applications: Cardiac, Transcranial, Abdomen
  - Probe Band Width : 1.5 – 3.6 MHz
  - Number of Element: 64
  - FOV(Max) : 90°
  - Physical Foot Print : 21 x 15 mm
  - B-mode Imaging Frequency : 2.0, 2.5, 3.0 MHz
  - Harmonic Frequency : 2.8, 3.0, 3.2, 3.6 MHz
  - Doppler Frequency : 1.7, 2.0 MHz
  - CW Doppler Frequency : 2.0 MHz
  - Biopsy Guide Available : Multi Angle, Reusable
- 7S Wide Band Phased Array Sector Probe
  - Applications: Cardiac, Perdiatrics, Abdomen
  - Probe Band Width : 3.1 – 8.0 MHz
  - Number of Element: 96
  - FOV(Max) : 90°
  - Physical Foot Print : 18 x 12 mm
  - B-mode Imaging Frequency : 4.0, 6.5, 8.0 MHz
  - Harmonic Frequency : 7.0, 8.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - CW Doppler Frequency : 4.0 MHz
  - Biopsy Guide Available : None
- 10S Wide Band Phased Array Sector Probe
  - Applications: Neonatal, Small Parts, Abdomen, Pediatrics
  - Probe Band Width : 4.0 – 11.0 MHz
  - Number of Element: 96
  - FOV(Max) : 90°
  - Physical Foot Print : 14 x 11 mm
  - B-mode Imaging Frequency : 7.0, 8.0, 10.0 MHz
  - Doppler Frequency : 5.0, 6.7 MHz
  - CW Doppler Frequency : 5.0 MHz
  - Biopsy Guide Available : None
- 7L Wide Band Linear Probe
  - Applications: Vascular, Small Parts
  - Probe Band Width : 3.0 – 8.0 MHz
  - Number of Element: 192
  - FOV(Max) : 46 mm
  - Physical Foot Print : 52 x 11 mm
  - B-mode Imaging Frequency : 4.0, 6.0, 7.0 MHz
  - Harmonic Frequency : 6.0, 8.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - Steered Angle : 0, +/- 5, 10, 15, 20°
  - Biopsy Guide Available : Multi Angle, Reusable
- 10L Wide Band Linear Probe
  - Applications: Vascular, Small Parts, Neonatal, Pediatrics
  - Probe Band Width : 4.0 – 12.0 MHz
  - Number of Element: 192
  - FOV(Max) : 39 mm
  - Physical Foot Print : 44 x 10 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 8.0, 10.0, 12.0 MHz
  - Doppler Frequency : 5.0, 6.7 MHz
  - Steered Angle : 0, +/- 5, 10, 15, 20°
  - Biopsy Guide Available : Multi Angle, Reusable
- M12L Matrix Array Wide Band Linear Probe
  - Applications: Small Parts, Vascular, Neonatal, Pediatrics
  - Probe Band Width : 5.0 – 14.0 MHz
  - Number of Element: 960
  - FOV(Max) : 39 mm
  - Physical Foot Print : 45 x 10 mm
  - B-mode Imaging Frequency : 7.0, 10.0, 12.0, 14.0 MHz
  - Harmonic Frequency : 10.0, 12.0, 14.0 MHz
  - Doppler Frequency : 5.0, 6.7 MHz
  - Steered Angle : 0, +/- 5, 10, 15, 20°
  - Biopsy Guide Available : Multi Angle, Reusable
- i12L Intraoperative Wide Band Linear Probe
  - Applications: Intraoperative, Small Parts, Vascular, Pediatrics
  - Probe Band Width : 5.0 – 12.0 MHz
  - Number of Element: 96
  - FOV(Max) : 25 mm
  - Physical Foot Print : 29 x 10 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 10.0, 12.0MHz
  - Doppler Frequency : 5.0 MHz
  - Steered Angle : +/- 5, 10, 15, 20°
  - Biopsy Guide Available : Not Available
- 6T Wide Band Multiplane Transesophageal Phased Array Sector Probe
  - Applications: Cardiac
  - Probe Band Width : 4.0 – 10.0 MHz
  - Number of Element: 64
  - FOV(Max) : 90°
  - B-mode Imaging Frequency : 4.0, 5.0, 6.0 MHz
  - Harmonic Frequency : 6.0 MHz
  - Doppler Frequency : 4.0, 5.0 MHz
  - CW Doppler Frequency : 5.0 MHz
  - Biopsy Guide Available : None
- BE9C Wide Band Biplane Microconvex Probe
  - Applications: Urology, Endocavity
  - Probe Band Width : 4.0 – 11.0 MHz
  - Number of Element: 96 x 2
  - Convex Radius : 9 mmR
  - FOV(Max) : 126°
  - Physical Foot Print : 25 x 9 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 8.0, 10.0 MHz
  - Doppler Frequency : 5.0, 6.7 MHz
  - Biopsy Guide Available : Reusable (stainless steel)

- T739 Intraoperative Wide Band Linear Probe
  - Applications: Intraoperative, Small Parts, Vascular, Pediatrics
  - Probe Band Width : 4.0 – 12.0 MHz
  - Number of Element: 192
  - FOV(Max) : 39 mm
  - Physical Foot Print : 44 x 10 mm
  - B-mode Imaging Frequency : 6.0, 8.0, 10.0 MHz
  - Harmonic Frequency : 8.0, 10.0, 12.0 MHz
  - Doppler Frequency : 5.0, 6.7 MHz
  - Steered Angle : +/- 5, 10, 15, 20°
  - Biopsy Guide Available : None
- P2D Non-imaging Single CW Doppler Pencil Probe
  - Applications: Cardiac
  - Frequnsy: 2.0 MHz
- P6D Non-imaging Single CW Doppler Pencil Probe
  - Applications: Cardiac, Vascular, Pediatric
  - Frequnsy: 5.0 MHz
- Probe Adapter
  - Pencil Probe Adapter (PPA) for P2D and P6D probes

Inputs and Outputs

- Video In
  - S-Video
- Video Out
  - RGB
  - VGA
  - Composite Color
  - Composite B/W (2)
  - S-Video
- Audio Stereo Out
- Audio Stereo In
- External Microphone In
- Connectors
  - Remote for B/W Printer
  - Remote for Color Printer or Camera
  - Footswitch
  - Ethernet
  - InSite Modem Connection (Option)
  - Power for Peripherals (5)

Safety Conformance

The LOGIQ 7 is:

- Listed to UL 2601-1 by a Nationally Recognized Test Lab
- Certified to CSA 22.2, 60601.1 by an SCC accredited Test Lab
- CE Marked to Council Directive 93/42/EEC on Medical Devices
- Conforms to the following standards for safety:
  - EN 60601-1 Electrical medical equipment
  - EN 60601-1-1 Electrical medical equipment
  - EN 60601-1-2 Electromagnetic compatibility
  - EN 60601-1-4 Programmable medical systems
  - IEC 61157 Declaration of acoustic output
  - EN 60601-2-37 Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
  - IEC 60601-2-37 Amendment 1 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)

GE LOGIQ 7 is designed for compatibility with commercially available ultrasound contrast agents. Because the availability of these agents is subject to government regulation and approval, product features intended for use with these agents may not be commercially marketed nor made available before the contrast agent is cleared for use. Contrast related product features are enabled only on systems for delivery to an authorized country or region of use. GE Healthcare makes no claims concerning the safety or effectiveness of contrast agents.

Not all features or specifications described in this document may available in all probes and/or modes.

General Electric Company reserves the right to make changes in specifications and features shown herein, or discontinue the product at any time without notice or obligation. Contact GE Representative for the most current information.

Supplement:

Cardiac Measurements/Calculations

B-Mode Measurements

- Aorta
  - Aortic Root Diameter (Ao Root Diam)
  - Aortic Arch Diameter (Ao Arch Diam)
  - Ascending Aortic Diameter (Ao Asc)
  - Descending Aortic Diameter (Ao Desc Diam)
  - Aorta Annulus Diameter (Ao Annulus Diam)
  - Aorta Isthmus (Ao Isthmus)
  - Aorta (Ao st junct)
- Aortic Valve
  - Aortic Valve Cusp Separation (AV Cusp)
  - Aortic Valve Area Planimetry (AVA Planimetry)
  - (Trans AVA)
- Left Atrium
  - Left Atrium Diameter (LA Diam)
  - LA Length (LA Major)
  - LA W idth (LA Minor)
  - Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio)
  - Left Atrium Area (LAA(d), LAA(s))
  - Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C)
- Left Ventricle
  - Left Ventricle Mass (LVPWd, LVPWs)
  - Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds)
  - Left Ventricle Internal Diameter (LVIDd, LVI Ds)
  - Left Ventricle Length (LVLd, LVLs)
  - Left Ventricle Outflow Tract Diameter (LVOT Diam)
  - Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs)
  - Left Ventricle Length (LV Major)
  - Left Ventricle Width (LV Minor)
  - Left Ventricle Outflow Tract Area (LVOT)
  - Left Ventricle Area, Two Chamber/Four Chamber/Short Axis (LVA (d), LVA (s))
  - Left Ventricle Endocardial Area, Width (LVA (d), LVA(s))
  - Left Ventricle Epicardial Area, Length (LVAepi (d), LVAepi (s))
  - Left Ventricle Mass Index (LVPWd, LVPWs)
  - Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs)
  - Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs)
  - Left Ventricle Stroke Index, Teichholz/Cube (LVIDd, LVIDs, and Body Surface Area)
  - Left Ventricle Fractional Shortening (LVIDd, LVIDs)
  - Left Ventricle Stroke Volume, Teichholz/Cubic (LVIDd, LVIDs)
  - Left Ventricle Stroke Index, Single Plane, Two Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs)
  - Left Ventricle Stroke Index, Single Plane, Four Chamber, Method of Disk (LVI Dd, LVIDs, LVSd, LVSs)
  - Left Ventricle Stroke Index, Bi-Plane, Bullet, Method of Disk (LVAd, LVAs)
  - Interventricular Septum (IVS)
  - Left Ventricle Internal Diameter (LVI D)
  - Left Ventricle Posterior Wall Thickness (LVPW)
- Mitral Valve
  - Mitral Valve Annulus Diameter (MV Ann Diam)
  - E-Point-to-Septum Separation (EPSS)
  - Mitral Valve Area by Pressure Half Time (MVA By PHT)
  - Mitral Valve Area Planimetry (MVA Planimetry)
- Pulmonic Valve
  - Pulmonic Valve Area (PV Planimetry)
  - Pulmonic Valve Annulus Diameter (PV Annulus Diam)
  - Pulmonic Diameter (Pulmonic Diam)
- Right Atrium
  - Right Atrium Diameter, Length (RAD Ma)
  - Right Atrium Diameter, Width (RAD Mi)
  - Right Atrium Area (RAA)
  - Right Atrium Volume, Single Plane, Method of Disk (RAAd)
  - Right Atrium Volume, Systolic, Single Plane, Method of Disk (RAAs)
- Right Ventricle
  - Right Ventricle Outflow Tract Area (RVOT Planimetry)
  - Left Pulmonary Artery Area (LPA Area)
  - Right Pulmonary Artery Area (RPA Area)
  - Right Ventricle Internal Diameter (RVIDd, RVIDs)
  - Right Ventricle Diameter, Length (RVD Ma)
  - Right Ventricle Diameter, Width (RVD Mi)
  - Right Ventricle Wall Thickness (RVAWd, RVAWs)
  - Right Ventricle Outflow Tract Diameter (RVOT Diam)
  - Left Pulmonary Artery (LPA)
  - Main Pulmonary Artery (MPA)
  - Right Pulmonary Artery (RPA)
- System
  - Interventricular Septum Thickness (IVSd, IVSs)
  - Inferior Vena Cava
  - Pulmonary Artery Diameter (MPA)
  - Systemic Vein Diameter (Systemic Diam)
  - Patent Ductus Arterosis Diameter (PDA Diam)
  - Pericard Effusion (PEs)
  - Patent Foramen Ovale Diameter (PFO Diam)
  - Ventricular Septal Defect Diameter (VSD Diam)
  - Interventricular Septum (IVS) Fractional Shortening (IVSd, IVSs)
- Tricuspid Valve
  - Tricuspid Valve Area (TV Panimetry)
  - Tricuspid Valve Annulus Diameter (TV
  - Annulus Diam)

M-Mode Measurements

- Aorta
  - Aortic Root Diameter (Ao Root Diam)
- Aortic Valve
  - Aortic Valve Diameter (AV Diam)
  - Aortic Valve Cusp Separation (AV Cusp)
  - Aortic Valve Ejection Time (LVET)
- Left Atrium
  - Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio)
  - Left Atrium Diameter (LA Diam)
- Left Ventricle
  - Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds)
  - Left Ventricle Internal Diameter (LVIDd, LVI Ds)
  - Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs)
  - Left Ventricle Ejection Time (LVET)
  - Left Ventricle Pre-Ejection Period (LVPEP)
  - Interventricular Septum (IVS)
  - Left Ventricle Internal Diameter (LVI D)
  - Left Ventricle Posterior Wall Thickness (LVPW)
- Mitral Valve
  - E-Point-to-Septum Separation (EPSS)
  - Mitral Valve Leaflet Separation (D-E Excursion)
  - Mitral Valve Anterior Leaflet Excursion (D-E Excursion)
  - Mitral Valve D-E Slope (D-E Slope)
  - Mitral Valve E-F Slope (E-F Slope)
- Pulmonic Valve
  - QRS complex to end of envelope (Q-to-PV close)
- Right Ventricle

- Right Ventricle Internal Diameter (RVIDd, RVIDs)
- Right Ventricle Wall Thickness (RVAWd, RVAWs)
- Right Ventricle Outflow Tract Diameter (RVOT Diam)
- Right Ventricle Ejection Time (RVET)
- Right Ventricle Pre-Ejection Period (RVPEP)
- Velocity Circumferential Fiber Shortening (Vcf)

• System
- Interventricular Septum Thickness (IVSd, IVSs)
- Pericard Effusion (PE(d))
- Interventricular Septum (IVS) Fractional Shortening (IVSd, IVSs)

• Tricuspid Valve
- QRS complex to end of envelope (Q-to-TV close)

Doppler Mode Measurements

• Aortic Valve
- Aortic Insufficiency Mean Pressure Gradient (AR Trace)
- Aortic Insufficiency Peak Pressure Gradient (AR Vmax)
- Aortic Insufficiency End Diastole Pressure Gradient (AR Trace)
- Aortic Insufficiency Mean Velocity (AR Trace)
- Aortic Insufficiency Mean Square Root Velocity (AR Trace)
- Aortic Insufficiency Velocity Time Integral (AR Trace)
- Aortic Valve Mean Velocity (AV Trace)
- Aortic Valve Mean Square Root Velocity (AV Trace)
- Aortic Valve Velocity Time Integral (AV Trace)
- Aortic Valve Mean Pressure Gradient (AV Trace)
- Aortic Valve Peak Pressure Gradient (AR Vmax)
- Aortic Insufficiency Peak Velocity (AR Vmax)
- Aortic Insufficiency End-Diastolic Velocity (AR Trace)
- Aortic Valve Peak Velocity (AV Vmax)
- Aortic Valve Peak Velocity at Point E (AV Vmax)
- Aorta Proximal Coarctation (Coarc Pre-Duct)
- Aorta Distal Coarctation (Coarc Post-Duct)
- Aortic Valve Insufficiency Pressure Half Time (AR PHT)
- Aortic Valve Flow Acceleration (AV Trace)
- Aortic Valve Pressure Half Time (AV Trace)
- Aortic Valve Acceleration Time (AV Acc Ti me)
- Aortic Valve Deceleration TIme (AV Trace)
- Aortic Valve Ejection Time (AVET)
- Aortic Valve Acceleration to Ejection Time Ratio (AV Acc Time, AVET)
- Aortic Valve Area according to PHT

• Left Ventricle
- Left Ventricle Outflow Tract Peak Pressure Gradient (VLOT Vmax)
- Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax)
- Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace)
- Left Ventricle Outflow Tract Mean Velocity (LVOT Trace)
- Left Ventricle Outflow Tract Mean Square Root Velocity (LVOT Trace)
- Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace)
- Left Ventricle Ejection Time (LVET)
- Cardiac Output by Aortic Flow (AVA Pl ani met ry, AV Trace)
- Stroke Volume Index by Aortic Flow (AVA Planimetry, AV Trace)

• Mitral Valve
- Mitral Valve Regurgitant Flow Acceleration (MR Trace)
- Mitral Valve Regurgitant Mean Velocity (MR Trace)
- Mitral Regurgitant Mean Square Root Velocity (MR Trace)
- Mitral Regurgitant Mean Pressure Gradient (MR Trace)
- Mitral Regurgitant Velocity Time Integral (MR Trace)
- Mitral Valve Mean Velocity (MR Trace)
- Mitral Valve Mean Square Root Velocity (MR Trace)
- Mitral Valve Velocity Time Integral (MR Trace)
- Mitral Valve Mean Pressure Gradient (MR Trace)
- Mitral Regurgitant Peak Pressure Gradient (MR Vmax)
- Mitral Valve Peak Pressure Gradient (MR Vmax)
- Mitral Regurgitant Peak Velocity (MR Vmax)
- Mitral Valve Peak Velocity (MR Vmax)
- Mitral Valve Velocity Peak A (MV A Velocity)
- Mitral Valve Velocity Peak E (MV E Velocity)
- Mitral Valve Area according to PHT (MV PHT)
- Mitral Valve Flow Deceleration (MV Trace)
- Mitral Valve Pressure Half Time (PV PHT)
- Mitral Valve Flow Acceleration (MV Trace)
- Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/ARatio)
- Mitral Valve Acceleration Time (MV Acc Time)
- Mitral Valve Deceleration Time (MV Dec Time)
- Mitral Valve Ejection Time ((MV Trace)
- Mitral Valve A-Wave Duration (MV A Dur)
- Mitral Valve Time to Peak (MV Trace)
- Mitral Valve Acceleration Time/Deceleration Time Ratio (MVAcc/Dec Time)
- Stroke Volume Index by Mitral Flow (MVA Planimetry, MVTrace)
- Mitral Valve Area from Continuity Equation (MVAPlanimetry, LVOT Vmax, MV Vmax)

• Pulmonic Valve
- Pulmonic Insufficiency Peak Pressure Gradient (PR Vmax)
- Pulmonic Insufficiency End-Diastolic Pressure Gradient (PRTrace)
- Pulmonic Valve Peak Pressure Gradient (PV Vmax)
- Pulmonic End-Diastolic Pressure Gradient (PR Trace)
- Pulmonic Insufficiency Peak Velocity (PR Vmax)
- Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax)
- Pulmonic Valve Peak Velocity (PV Vmax)
- Pulmonic End-Diastolic Velocity (PV Trace)
- Pulmonary Artery Diastolic Pressure (PV Trace)
- Pulmonic Insufficiency Mean Pressure Gradient (PR Trace)
- Pulmonic Valve Mean Pressure Gradient (PV Trace)
- Pulmonic Insufficiency Mean Velocity (PR Trace)
- Pulmonic Insufficiency Mean Square Root Velocity(PR Trace)
- Pulmonic Insufficiency Velocity Time Integral (PR Trace)
- Pulmonic Valve Mean Velocity (PV Trace)
- Pulmonic Valve Mean Square Root Velocity (PV Trace)
- Pulmonic Valve Velocity Time Integral (PV Trace)
- Pulmonic Insufficiency Pressure Half Time (PR PHT)
- Pulmonic Valve Flow Acceleration (PV Acc Time)

- Pulmonic Valve Acceleration Time (PV Acc Time)
- Pulmonic Valve Ejection Time (PVET)
- Pulmonic Valve Pre-Ejection Period (PVPEP)
- QRS complex to end of envelope (Q-to-PV close)
- Pulmonic Valve Acceleration to Ejection TIme Ratio (PV Acc Time, PVET)
- Pulmonic Valve Pre-Ejection to Ejection Time Ratio (PVPEP, PVET)

• Right Ventricle
- Right Ventricle Outflow Tract Peak Pressure Gradient (RVOT Vmax)
- Right Ventricle Systolic Pressure (RVOT Vmax)
- Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax)
- Right Ventricle Diastolic Pressure (RVOT Trace)
- Right Ventricle Outflow Tract Velocity Time Integral (RVOTTrace)
- Right Ventricle Ejection Time (RV Trace)
- Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOTTrace)
- Right Ventricle Stroke Volume Index by Pulmonic Flow (RVOT Planimetry, RVOT Trace)

• System
- Pulmonary Artery Peak Velocity (PV Vmax)
- Pulmonary Vein Velocity Peak A (reverse) (P Vein A)
- Pulmonary Vein Peak Velocity (P Vein D, P Vein S)
- Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic)
- Ventricular Septal Defect Peak Velocity (VSD Vmax)
- Atrial Septal Defect (ASD Diastolic, ASD Systolic)
- Pulmonary Artery Velocity Time Integral (PV Trace)
- Systemic Vein Velocity Time Integral (PDA Trace)
- Pulmonary Vein A-Wave Duration (P Vein A Dur)
- IsoVolumetric Relaxation Time (IVRT)
- IsoVolumetric Contraction Time (IVCT)
- Pulmonary Vein S/D Ratio (P Vein D, P Vein S)
- Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax)
- Pulmonic-to-Systemic Flow Ratio (Qp/Qs)

• Tricuspid Valve
- Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax)
- Tricuspid Valve Peak Pressure Gradient (TV Vmax)
- Tricuspid Regurgitant Peak Velocity (TR Vmax)
- Tricuspid Valve Peak Velocity (TV Vmax)
- Tricuspid Valve Velocity Peak A (TV A Velocity)
- Tricuspid Valve Velocity Peak E (TV E Velocity)
- Tricuspid Regurgitant Mean Pressure Gradient (TR Trace)
- Tricuspid Valve Mean Pressure Gradient (TV Trace)
- Tricuspid Regurgitant Mean Velocity (TR Trace)
- Tricuspid Regurgitant Mean Square Root Velocity (TR Trace)
- Tricuspid Regurgitant Velocity Time Integral (TR Trace)
- Tricuspid Valve Mean Velocity (TV Trace)
- Tricuspid Valve Mean Square Root Velocity (TV Trace)
- Tricuspid Valve Velocity Time Integral (TV Trace)
- Tricuspid Valve Time to Peak (TV Acc/Dec Time)
- Tricuspid Valve Ejection Time (TV Acc/Dec Time)
- Tricuspid Valve A-Wave Duration (TV A Dur)
- QRS complex to end of envelope (Q-to-TV close)
- Tricuspid Valve Pressure Half Time (TV PHT)
- Stroke Volume by Tricuspid Flow (TV Planimetry, TV Trace)
- Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity)

Color Flow Mode Measurements

• Aortic Valve
- Proximal Isovelocity Surface Area: Regurgitant Orifice Area (AR Radius)
- Proximal Isovelocity Surface Area: Radius of Aliased Point (AR Radius)
- Proximal Isovelocity Surface Area: Regurgitant Flow (AR Trace)
- Proximal Isovelocity Surface Area: Regurgitant Volume Flow (AR Trace)
- Proximal Isovelocity Surface Area: Aliased Velocity (AR Vmax)

• Mitral Valve
- Proximal Isovelocity Surface Area: Regurgitant Orifice Area (MR Radius)
- Proximal Isovelocity Surface Area: Radius of Aliased Point (MR Radius)
- Proximal Isovelocity Surface Area: Regurgitant Flow (MR Trace)
- Proximal Isovelocity Surface Area: Regurgitant Volume Flow (MR Trace)
- Proximal Isovelocity Surface Area: Aliased Velocity (MR Vmax)

Combination Mode Measurements

• Aortic Valve
- Aortic Valve Area (Ao Root Diam, LVOT Vmax, AV Vmax)
- Aortic Valve Area by Continuity Equation by Peak Velocity (Ao Root Diam, LVOT Vmax, AV Vmax)
- Stroke Volume by Aortic Flow (AVA Pl ani met ry, AV Trace)
- Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR)
- Aortic Valve Area by Continuity Equation VTI (Ao Root Diam, LVOT Vmax, AV Trace)

• Left Ventricle
- Cardiac Output, Teichholz/Cubic (LVIDd, LVI Ds, HR)
- Cardiac Output Two Chamber, Single Plane, Area-Length/ Method of Disk(Simpson) (LVAd, LVAs, HR)
- Cardiac Output Four Chamber, Single Plane, Area-Length/ Method of Disk(Simpson) (LVAd, LVAs, HR)
- Ejection Fraction Two Chamber, Single Plane, Area-Length/ Method of Disk(Simpson) (LVAd, LVAs)
- Ejection Fraction Four Chamber, Single Plane, Area-Length/ Method of Disk(Simpson) (LVAd, LVAs)
- Left Ventricle Stroke Volume, Single Plane, Two Chamber/Four Chamber, Area-Length (LVAd, LVAs)
- Left Ventricle Stroke Volume, Single Plane, Two Chamber/Four Chamber, Method of Disk(Simpson) (LVIDd, LVIDs, LVAd, LVAs)
- Left Ventricle Volume, Two Chamber/Four Chamber, Area-Length (LVAd, LVAs)
- Ejection Fraction, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH)
- Left Ventricle Stroke Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH)
- Left Ventricle Volume, Bi-Plane, Method of Disk (LVAd, LVAs, 2CH, 4CH)
- Left Ventricle Stroke Index, Single Plane, Two Chamber/Four Chamber, Area-Length (LVSd, LVSs, and BSA)
- Left Ventricle Volume, Single Plane, Two Chamber/Four Chamber, Method of Disk (LVAd, LVAs)
- Left Ventricle Volume, Apical View, Long Axis, Method of Disk (LVAd, LVAs)
- Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace)

• Mitral Valve
- Stroke Volume by Mitral Flow (MVA

Planimetry, MV Trace)
- Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR)

• Pulmonic Valve
- Stroke Volume by Pulmonic Flow (PV Planimetry, PV Trace)
- Cardiac Output by Pulmonic Flow (PV Planimetry, PV Trace, HR)

• Tricuspid Valve
- Cardiac Output by Tricuspid Flow (TV Planimetry, TV Trace, HR)

Cardiac Worksheet

• Parameter : lists the mode, the measurement folder, and the specific measurement
• Measured Value: Up to six measurement values for each item. Average, maximum, minimum, or last

Generic Study in Cardiology

• Stroke Volume (SV)
• Flow Volume (FV)
• Cardiac Output (CO)
• Flow Volume Output (FVO)