



Pushing the boundaries

Philips iU22 ultrasound system specifications

In today's busy and demanding healthcare environment, you can rely on the iU22 system for superb image quality for all patient types, advanced volume imaging solutions, innovative workflow tools and exceptional scanning ease.

PHILIPS

Table of Contents

Applications.....	3	iFOCUS Intelligent Focusing Technology	8
Imaging Modes.....	3	iOPTIMIZE Intelligent Optimization	8
Imaging Formats	3	Imaging Modes	9
Architecture.....	4	M-mode	9
Transducers	4	Live xPlane Imaging.....	9
Explora Transducers	4	Live Volume Imaging/Live 3D Echo	9
PureWave Crystal Technology	4	Tissue Doppler Imaging (TDI).....	9
xMATRIX Technology.....	4	3D/4D and MPR Imaging	9
Transducer Selection	4	Pulsed Wave (PW) Doppler	9
L17-5 Broadband Linear Array.....	5	Steerable Continuous Wave (CW) Doppler.....	9
L15-7io Broadband Compact Linear Array.....	5	Spectral Doppler.....	9
L12-5 50 mm Broadband Linear Array	5	Adaptive Broadband Flow Imaging	10
VL13-5 Broadband Linear Array	5	Contrast Imaging	10
L9-3 Broadband Linear Array	5	Interventional Imaging	10
C5-1 Broadband Curved Array with PureWave		Tissue Harmonic Imaging (THI)	10
Crystal Technology	5	Color Power Angio Imaging (CPA)	10
C5-2 Broadband Curved Array.....	6	Automated 3D, 4D and MPR Imaging	10
C8-5 Broadband Curved Array.....	6	Freehand 3D Volume and MPR Imaging	11
C9-4 Broadband Curved Array.....	6	Spatio-Temporal Image Correlation (STIC) Imaging..	11
S5-1 Sector Array with PureWave		Panoramic SonoCT Imaging	11
Crystal Technology	6	Work Flow	11
S4-1 Broadband Sector Array	6	Protocols with SmartExam	11
V6-2 Broadband Curved Array	6	Stress Echo Protocols.....	11
C9-5ec Broadband Curved Array	6	Volume Imaging Solutions for Connected	
C8-4v Broadband Curved Array	6	Radiology Departments.....	12
3D9-3v Broadband Curved Array	6	QuickSAVE Feature.....	12
X7-2 xMATRIX Array with PureWave		Control Panel and User Interface.....	12
Crystal Technology	6	Display Annotation.....	12
X3-1 xMATRIX Array.....	7	Image Presentation	13
S7-2omni Sector Array	7	Cineloop Review	13
D2cwc CW Transducer (Pedoff).....	7	Connectivity	13
D2tcd PW Transducer (Pedoff)	7	Measurements and Analysis	14
D5cwc CW Transducer (Pedoff).....	7	Measurement Tools and General Description.....	14
Advanced Imaging Controls	7	Quantification	14
2D Grayscale Imaging.....	7	Clinical Option Analysis Packages	15
Next Generation SonoCT Real-time		High Q Automatic Doppler Analysis	16
Compound Imaging.....	7	System Features	16
XRES Adaptive Image Processing	7	System Cart.....	16
Advanced XRES Adaptive Image Processing.....	7	Physio	16
Live Volume Imaging/Live 3D Echo	8	Peripheral Devices/Exam Documentation	17
Tissue Aberration Correction	8	Electrical Power/Video Parameters	17
Coded Beamforming	8	Safety Requirements	17
iSCAN Intelligent Optimization	8	Transducer Chart	18
iCOMMAND Intelligent Voice Control.....	8		

System Specifications

Applications

- Abdominal
- Obstetrical
- Fetal Echo
- Cerebrovascular
- Peripheral vascular
- Abdominal vascular
- TCD: temporal and orbital
- Gynecological and fertility
- Small parts and superficial
- Musculoskeletal
- Pediatric general imaging
- Prostate
- Adult echocardiography
- Stress echocardiography
- Adult transesophageal echocardiography
- Epicardial imaging
- Surgical imaging
- Interventional imaging
- Contrast imaging

Imaging Modes

- 2D grayscale imaging with advanced pulse coding, pulse shaping and frequency compounding technologies
- Multivariate Tissue Harmonic imaging including Pulse Inversion technology and coded harmonics
- Tissue aberration correction
- Coded beamforming with chirp transmit
- Next generation SonoCT beam-steered real-time compound imaging
- Harmonic SonoCT imaging
- Next generation XRES adaptive image processing technology
- iSCAN intelligent scanning for one-button TGC, gain and compression map optimization
- iSCAN with AGC (Adaptive Gain Compensation) for real-time line-by-line TGC optimization
- Simultaneous 2D M-mode
- Broadband Flow imaging
- M-mode
- M-mode Tissue Doppler imaging
- Live Volume imaging/Live 3D Echo (instantaneous volume rendering)
- Live xPlane imaging (simultaneous display of two live imaging planes)
- Advanced volumetric modes including iSlice and thick slice capabilities

- Philips Color Power Angio imaging (CPA) and Directional CPA
- Duplex and simultaneous 2D/pulsed wave (PW) Doppler
- Duplex continuous wave (CW) Doppler
- Duplex color (Doppler) and CW Doppler
- High-PRF PW Doppler
- Duplex 2D, color, PW Doppler
- Duplex 2D, CPA, PW Doppler
- Independent Triplex for simultaneous 2D, color, PW Doppler
- Independent Triplex for simultaneous 2D, CPA, PW Doppler
- Dual imaging with:
 - Choice of independent Philips cine loop buffers or split screen imaging
 - Mixed mode display with one image live while other is frozen, e.g. 2D/2D, 2D/color, color/color, color/CPA
- Color Compare mode
 - Dual live display with grayscale reference image and color Doppler image
- Philips High Definition Zoom (Write Zoom)
- Reconstructed zoom with pan (Read Zoom)
- Panoramic imaging
- Panoramic imaging with SonoCT, XRES and harmonic modes
- Freehand 3D and MPR imaging with SonoCT, XRES and harmonic modes
- Automated 3D and 4D imaging with SonoCT, XRES and harmonic modes
- Philips Chroma imaging in 2D, 3D, 4D, MPR, Panoramic, M-mode and Doppler modes
- Dynamic colorization in Live Volume imaging/Live 3D Echo mode
- Contrast imaging, including pulse inversion, power modulation, PMPI and coded harmonic sequences
- Live MVI
- Spatio-temporal image correlation (STIC)

Imaging Formats

- 2D linear: WideSCAN with SonoCT
- 2D curved and tightly-curved: WideSCAN with SonoCT
- 2D sector
- Dual 2D
- Panoramic
- 2D with 3D volume
- 2D with 4D volume
- 3D volume
- Live 3D volume
- 4D volume
- 2D, MPR and volume

System Specifications

Architecture

- Powerful Philips xSTREAM imageformer architecture capable of processing multiple data streams simultaneously for structural, functional and volumetric imaging
 - Built for 2D, dual 2D, Live xPlane, 3D, Live Volume imaging/Live 3D Echo, 4D, MPR (multiplanar reconstruction) and Panoramic imaging capability
 - True real-time volume imageforming capability with multiple rendering engines
 - Processes 64 megavoxels per second and renders 300 mega-ray cast samples per second
 - Instant rendering of MPR images that rival acquired 2D resolution
- Next generation digital broadband acoustic beamforming with custom ASICs
 - Incorporates advanced pulse shaping, pulse coding and multi-variant harmonics technologies
 - Up to 57,000 dynamically scalable digital channels
 - Support for transducer frequencies up to 17 MHz
- Designed to support virtually any array configuration: linear, curved, tightly curved, sector, mechanical volume array and xMATRIX electronic volume array
- New high-bit, low noise, digital circuitry
 - Exclusive adaptive signal to noise ratio achieves system dynamic range up to 180 dB for improved 2D performance and increased Doppler sensitivity
- Powerful distributed multi-processor environment achieves 250 billion operations per second for nearly instantaneous mode changes and support for advanced system functionality and quantification
- Philips next generation SonoCT real-time compound imaging
 - High precision beam-steered image compounding for acquisition of more tissue information and reduction of angle-generated artifacts
 - Up to 9 beam-steered lines of sight
 - Available on linear, curved and tightly curved arrays and mechanical volume arrays
 - WideSCAN capability to expand field of view during SonoCT imaging
 - SonoCT capability available during contrast imaging modes
- Philips next generation XRES Adaptive Image Processing for noise and artifact reduction that improves tissue conspicuity and margin definition
 - Performs 350 million calculations per frame of image data up to 150 frames per second
 - Operates in 2D and 2D/CFI/Doppler mixed modes up to 150 frames per second
 - XRES capability available in contrast imaging modes

- Philips new Adaptive Broadband Flow Imaging
 - Automatically adjusts Doppler bandwidth for optimal flow sensitivity and resolution
 - Advanced dynamic motion suppression algorithms reduce flash artifacts
- Multi-application workflow Protocols
 - General imaging and stress echo applications
 - Step by step on-screen guidance
 - Full user customization
 - Automatic mode switching
 - Smart Exam – Protocol record function for creation of custom protocols
- Fully independent Triplex multiple mode operation for extraordinary ease of use during Doppler procedures
- Fast system boot up
 - From OFF, approximately 200 seconds

Transducers

Explora Transducers

- Ergonomic designs with lightweight SuperFlex cable technology
- Advanced low-loss lens technology for better penetration with less artifacts
- Breakthrough broadband frequency response
- Support for very high frequencies – up to 17 MHz
- Advanced micro-electronics in linear, curved, tightly curved, sector, mechanical volume array and xMATRIX configurations
- High precision automated volume transducers

PureWave Crystal Technology

- Available on the S5-1, C5-1 and X7-2 transducers
- Breakthrough crystal technology allows greater acoustic efficiency and bandwidth

xMATRIX Technology

- Available on the X3-1 and X7-2 transducers
- Unique array configuration of fully-sampled elements allows 2D, Live xPlane and Live Volume imaging

Transducer Selection

- Electronic switching of transducers using three universal connectors
- Dedicated (Pedoff) continuous wave Doppler connector
- Automatic parameter optimization of each transducer for exam type through Tissue Specific Imaging (TSI) software
- User customizable imaging presets for each transducer
- Automatic dynamic receive focal optimization
- Transmit focal characteristics automatically controlled through TSI, iFOCUS and DRS functions

System Specifications



L17-5 Broadband Linear Array

- Ultra-fine pitch, 288 element, high resolution linear array
- 17 to 5 MHz extended operating frequency range
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- High resolution superficial applications including small parts, breast, superficial vascular and musculoskeletal imaging
- Tissue aberration correction selection for advanced breast imaging TSI
- Supports reusable plastic biopsy guide (up to 14 gauge)

L15-7io Broadband Compact Linear Array

- 15 to 7 MHz extended operating frequency range
- Unique lens design allowing high resolution imaging at transducer surface
- Steerable pulsed wave and color Doppler, Color Power Angio, Panoramic and XRES imaging
- High resolution intraoperative vascular and superficial (MSK and small parts) applications

L12-5 50 mm Broadband Linear Array

- Fine pitch, 256 element, high resolution linear array
- 12 to 5 MHz extended operating frequency range
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- High resolution superficial applications including small parts, breast, vascular and musculoskeletal imaging
- Tissue aberration correction selection for advanced breast imaging TSI
- Supports stainless steel, reusable biopsy guide (up to 14 gauge)

VL13-5 Broadband Linear Array

- Fine pitch, 192 element, high resolution linear array
- 13 to 5 MHz extended operating frequency range
- Supports high resolution 2D imaging
- Supports high resolution, quantitative, single sweep 3D volume acquisition
- Supports 4D imaging
- SonoCT, XRES and harmonic imaging
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- High resolution superficial applications including small parts, breast and vascular imaging
- Tissue aberration correction selection for advanced breast imaging TSI
- Supports reusable double angle biopsy guide (up to 14 gauge)

L9-3 Broadband Linear Array

- 9 to 3 MHz extended operating frequency range
- Fine Angle Steering of color and pulsed wave Doppler
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES, and harmonic imaging
- Vascular (carotid, arterial and venous) and superficial imaging applications
- Cerebrovascular (carotids, vertebrales), peripheral vascular (venous, arterial), internal mammary vessels and musculoskeletal imaging
- Interventional application

C5-1 Broadband Curved Array with PureWave Crystal Technology

- 5 to 1 MHz extended operating frequency range
- High density curved array with 160 elements
- Steerable pulsed, High-PRF and color Doppler; and Color Power Angio, SonoCT, Advanced XRES, and multi-variate harmonic imaging
- General purpose abdominal, obstetrical, gynecological and interventional applications
- Discreet TSI for deep abdominal, obstetrical and gynecology penetration enables:
 - Tissue aberration correction
 - Coded beamforming with chirp transmit and coded harmonics
- Supports reusable 4 angle plastic biopsy guide (14-23 gauge)
- Intervention application

System Specifications

C5-2 Broadband Curved Array

- 5 to 2 MHz extended operating frequency range
- Steerable pulsed Doppler, High-PRF Doppler, color Doppler, and Color Power Angio, SonoCT, XRES and harmonic imaging
- General purpose abdominal, obstetrical, gynecological and interventional applications
- Supports reusable plastic biopsy guide (14-25 gauge)

C8-5 Broadband Curved Array

- 8 to 5 MHz extended operating frequency range
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, harmonic and XRES imaging
- Pediatric abdominal and neonatal cephalic imaging
- Supports reusable plastic biopsy guide (14-25 gauge)

C9-4 Broadband Curved Array

- 9 to 4 MHz extended operating frequency range
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- General purpose small adult and pediatric abdominal, obstetrical and gynecological applications
- Supports reusable plastic biopsy guide (dual angle) (16-25 gauge)

S5-1 Sector Array with PureWave Crystal Technology

- 5 to 1 MHz extended operating frequency range
- Phased array, 80 elements
- 2D; CW, steerable pulsed wave, High PRF and color Doppler; Tissue Doppler, XRES and harmonic imaging
- Adult echo, TCD, abdominal vascular and abdominal renal applications
- Contrast application

S4-1 Broadband Sector Array

- 4 to 1 MHz extended operating frequency range
- Steerable pulsed wave, High-PRF Doppler and color Doppler; Color Power Angio, XRES and harmonic imaging
- Deep abdominal, obstetrical, gynecological and intervention applications
- Supports reusable plastic biopsy guide (dual angle) (16-25 gauge)
- Contrast application

V6-2 Broadband Curved Array

- 6 to 2 MHz extended operating frequency range
- Steerable pulsed wave, High-PRF and color Doppler; Color Power Angio/Directional CPA and STIC
- Supports high resolution 2D imaging
- Supports high resolution, quantitative, single sweep 3D volume acquisition

- Supports 4D imaging up to 30 volumes per second
- SonoCT, XRES and harmonic imaging
- General purpose abdominal, obstetrical and gynecological volumetric applications
- Supports interventional applications
- Supports reusable biopsy guide (dual angle) (14-23 gauge)

C9-5ec Broadband Curved Array

- 9 to 5 MHz extended operating frequency range
- End-fire sector, 8 mm radius of curvature, 150° field-of-view
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- Endocavitary applications including endovaginal and endorectal and interventional
- Supports disposable biopsy guide (16-22 gauge)

C8-4v Broadband Curved Array

- 8 to 4 MHz extended operating frequency range
- End-fire sector, 11 mm radius of curvature, 135° field-of-view
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- Endovaginal applications
- Supports disposable biopsy guide (15-22 gauge)

3D9-3v Broadband Curved Array

- 9 to 3 MHz extended operating frequency range
- 130° field-of-view
- Supports high resolution 2D imaging
- Supports high resolution, quantitative, single sweep 3D volume acquisitions (mechanical and freehand)
- Supports 4D imaging up to 22 volumes per second
- Steerable pulsed wave and color Doppler, Color Power Angio, SonoCT, XRES and harmonic imaging
- Endovaginal applications
- Interventional applications
- Supports disposable biopsy guide (16 to 22 gauge)

X7-2 xMATRIX Array with PureWave Crystal Technology

- Fully-sampled matrix phased array with 2,500 elements
- 7 to 2 MHz extended operating frequency range
- Triple high line density in Live volume and full volume modes
- 2D, biplane (Live xPlane), triggered full volume, Live Volume imaging/Live 3D Echo, thick slice imaging, 2D, biplane and 3D imaging color Doppler, pulsed Doppler, XRES and harmonic imaging
- Pediatric applications: abdomen, neonatal head, and fetal echo

System Specifications

X3-1 xMATRIX Array

- Fully-sampled Matrix phased array with 2400 elements
- 3 to 1 MHz extended operating frequency range
- 2D, biplane (Live xPlane), triggered full volume, Live Volume imaging/Live 3D Echo, thick slice imaging, 2D, biplane and 3D imaging color Doppler, XRES and harmonic imaging
- Adult (including epicardial) and pediatric cardiology, abdominal, obstetrical, interventional and contrast applications
- Supports reusable biopsy guide (dual angle) (14-23 gauge)
- Contrast application

S7-2omni Sector Array

- Transesophageal phased array with 64 elements
- Mechanically rotatable array from 0 to 180 degrees
- 7 to 2 MHz extended operating frequency range
- Electrocautery suppression
- 2D; CW, Steerable PW, High PRF and color Doppler; Tissue Doppler, XRES and harmonic imaging
- Advanced Autocool capability
- Adult TEE applications

D2cwc CW Transducer (Pedoff)

- Dedicated 2 MHz continuous wave Doppler
- Adult cardiology applications

D2tcd PW Transducer (Pedoff)

- Dedicated 2 MHz pulsed wave Doppler
- Transcranial Doppler applications

D5cwc CW Transducer (Pedoff)

- Dedicated 5 MHz continuous wave Doppler
- Deep venous and arterial applications

Advanced Imaging Controls

2D Grayscale Imaging

- Smart TGC: pre-defined TGC curves optimized for consistently excellent imaging with minimal TGC adjustment
- Adjustable temporal resolution and spatial resolution with DRS control
- 12-level digital reconstructed zoom with pan capability
- High Definition zoom concentrates all image processing power into a user-defined area of interest; possible to combine High Definition (HD) Zoom with Pan Zoom
- Cineloop image review
- Selectable 2D compression settings

- Tissue aberration correction
- Sector size and steering control for sector and curved array image formats
- Selectable 2D line density with DRS control
- Dual imaging with either
 - Independent cineloop buffers
 - Split screen imaging
- Dual imaging with Color Compare
- Dual imaging with fundamental and contrast optimization
- Chroma imaging with multiple color maps
- 256 (8 bits) discrete gray levels
- 2D acquisition frame rate up to 500 frames/sec (dependent on field-of-view, depth and angle)
- Live MVI

Next Generation SonoCT Real-time Compound Imaging

- Available on all transducers except sector and xMATRIX arrays
- Eliminates virtually all clutter and artifact
- Automatic selection of the number of steering angles based on the user-selected Resolution/Frame Rate (Res/Speed) condition
- Up to 9 lines of sight – automatically adjusted via DRS control
- Operates in conjunction with Tissue Harmonic Imaging, volumetric modes, Panoramic imaging and duplex Doppler
- Operates in conjunction with XRES imaging
- Available in contrast modes
- Available with WideSCAN format during 2D imaging for extended field-of-view operation

XRES Adaptive Image Processing

- Available on all imaging transducers
- Eliminates virtually all speckle noise and enhances border definition
- Available in all imaging modes including color flow and Doppler
- Available in contrast modes
- Operates in conjunction with SonoCT imaging

Advanced XRES Adaptive Image Processing

- Available on C5-1 transducer with all TSI applications and VL13-5, L12-5 and L17-5 in advanced breast applications
- High resolution algorithms for advanced speckle noise reduction, refined tissue pattern displays and fine border definition
- High speed processing allows 150 frame per second displays
- Available in all imaging modes including color flow and Doppler
- Available in contrast modes
- Operates in conjunction with SonoCT imaging

System Specifications

Live Volume Imaging/Live 3D Echo

- Grayscale imaging controls
- 3D Vision control
- Dynamic volume colorization
- Chroma colorization
- 3D Home
- Up/down invert
- XRES technology
- Magnify
- Show/Hide echo or Color
- Reset controls
- Rotate
- Auto Crop
- Manual Crop
- Brightness
- Smoothing
- Reference images
- Post processing
- Right Invert
- Density
- Capture
- Compress
- Gain
- ECG
- ECG trigger
- Cineloop/Live Volume imaging/Live 3D Echo
- Review/Full Volume
- Save volume in native or native loop

Tissue Aberration Correction

- Automatically enabled when ABD maximum penetration TSI is selected on C5-1 transducer
 - Corrects for speed of sound disturbances due to excessive adipose layer on obese patients
- User selections when the VL13-5, L12-5 and L17-5 Advanced Breast TSI's are activated
 - Corrects for speed of sound disturbances in fatty tissue

Coded Beamforming

- Automatically enabled when ABD, OB or GYN maximum penetration TSI is selected on C5-1 transducer
- Coded excitation using new chirp transmit technology that improves penetration and recovers more tissue information for greater detail resolution at extended depths
- Coded harmonics mode reduces image degrading artifacts while maintaining penetration qualities

iSCAN Intelligent Optimization

- One-touch image optimization
 - In 2D mode, one button automatic adjustment of:
 - TGC and Receiver Gain to achieve optimal uniformity and brightness of tissues
 - Compression curve based on the range of detectable tissue signals
 - In Doppler mode, one button automatic adjustment of:
 - Doppler PRF based on detected velocity
 - Doppler Baseline based on detected flow direction
- Available on all imaging transducers
- Operates in conjunction with SonoCT and XRES imaging
- Adaptive Gain Compensation (AGC) dynamically adjusts (every pixel on every scan line) low level 2D echoes to reduce gain artifacts (shadows/through transmission) and improve image uniformity with 2D and 3D imaging

iCOMMAND Intelligent Voice Control

- Exclusive Philips voice recognition engine
 - Uses intelligence to learn user speech patterns and improve performance with use
 - Wireless microphone technology
- Controls most system functions with a simple voice command
 - Mode changes and annotation
- Eliminates many keystrokes and reduces repetitive motion
- Allows 'hands free' system control during difficult scanning environments
- Voice profiles can be copied to DVD and transferred to other systems of like configuration

iFOCUS Intelligent Focusing Technology

- Automatic computation of beam characteristics for selected region of interest
- Provides best detail resolution and tissue uniformity for selected area
- Eliminates need for traditional focus controls
- Simplifies exam optimization

iOPTIMIZE Intelligent Optimization

- Multiple technologies for one-button approach to automatically and instantly adjust system performance for different patient sizes, flow states and clinical requirements
- *Tissue Specific Imaging*—adjusts nearly 4,000 parameters during transducer/application selection
 - *Patient Optimization*—adjusts 2D performance to instantly adapt to different patient sizes
 - *Flow Optimization*—adjusts Broadband Flow performance to instantly adapt to different flow states

System Specifications

- *Dynamic Resolution System (DRS)*—one control adjusts nearly 40 parameters simultaneously for user preference of spatial resolution or temporal resolution during clinical procedures.

One control optimizes functions such as:

- Line density
- Persistence
- Pulse Inversion Harmonics
- Synthetic aperture
- Number of lines of sight (SonoCT)
- RF interpolation
- Parallel beamforming

Imaging Modes

M-mode

- Available on all imaging transducers
- Selectable sweeping rates
- Time markers: 0.1 and 0.2 seconds
- Acquisition zoom capability
- Selectable display format prospective or retrospective (1/3-2/3, 1/2-1/2, 2/3-1/3, side by side, full screen)
- Chroma colorization with multiple color maps
- Cineloop review for retrospective analysis of M-mode data
 - 256 (8 bits) discrete gray levels

Live xPlane Imaging

- Available on X3-1 and X7-2 xMATRIX transducers
- Simultaneous display of two live imaging planes
- Color Live xPlane
- Rotation, lateral and elevation steering
- Contrast and interventional modes

Live Volume Imaging/Live 3D Echo

- Available on X3-1 and X7-2 xMATRIX transducers
- Full volume sweep
- Adjustable live volume angle control
- Adjustable X, Y, Z rotation
- Dynamic colorization
- Adjustable vision preset control
- Adjustable center, back, front, volume imaging control
- Contrast and interventional modes
- Thick slice mode
- Support volume rates up to 90 vps
- 3D Zoom
- Half clam shell
- Crop adjust with cropping
- 3D color flow
- ECG display

Tissue Doppler Imaging (TDI)

- Available on S5-1 and S7-2omni transducers
- Allows high frame rate acquisition of tissue motion (up to 400 fps)
- Color Gain and TGC
- 8 color maps
- Velocity (cm/s)

3D/4D and MPR Imaging

- Volume display with surface rendering (transparency, brightness and lighting controls)
- Multiplanar reconstruction (MPR) view display
- Specialized algorithms and maps maximize three-dimensional display
- Cropping tools on both volume and multiplanar reconstruction (MPR) views
- Slice control on MPR and volume displays
- Supported by SonoCT and XRES modes to reduce noise artifacts

Pulsed Wave (PW) Doppler

- Available on all imaging transducers
- Adjustable sample volume size: 1.0-20 mm (transducer dependent)
- Simultaneous or duplex mode of operation
- Simultaneous 2D, color Doppler, pulsed Doppler
- High-PRF capability in all modes including Duplex, Simultaneous Duplex and Triplex
- iSCAN optimization automatically adjusts scale and baseline

Steerable Continuous Wave (CW) Doppler

- Available on cardiac sector array transducers only
- Steerable through 90° sector
- Maximum velocity range: 19 m/sec (transducer dependent)

Spectral Doppler

- Display annotations including Doppler mode, scale (cm/sec) Nyquist limit, wall filter setting, gain, acoustic output status, sample volume size, normal/inverted, angle correction, grayscale curve
- Ultra-high resolution 1 millisecond spectral FFT rate
- Angle correction with automatic velocity scale adjustment
- Adjustable velocity display ranges
- 9 position shifts (including 0)
- Normal/invert display around horizontal zero line
- Selectable sweep speeds
- Selectable low-frequency signal filtering with adjustable wall filter settings
- Selectable grayscale curve for optimal display
- Selectable Chroma colorization maps
- Selectable display format prospective or retrospective
 - 1/3-2/3, 1/2-1/2, 2/3-1/3, side by side, full screen

System Specifications

- Doppler Review for retrospective analysis of Doppler data
- Digitally-enhanced 8-speaker stereo output
- 256 (8 bits) discrete gray levels
- Post-processing in PW frozen mode includes map, baseline, invert and Chroma

Adaptive Broadband Flow Imaging

- Automatically adapts transmit and receive bandwidth processing based on the color box position providing optimal sensitivity and color resolution
- Available on all imaging transducers
- Cineloop review with full playback control
- Advanced motion suppression with intelligent algorithms; adapts to various application types to selectively eliminate virtually all color motion artifact
- 256 color bins
- Parallelogram steering on linear array transducers:
3 angles on L12-5 and L17-5, 5 angles on L9-3 and L15-7io
- Trackball-controlled color region of interest: size and position
- Maps, filters, color sensitivity, line density, smoothing, echo write priority, color persistence, gain and baseline optimized automatically by exam type or is user selectable
- Velocity and variance displays
- Color invert in Live and Frozen imaging
- DRS control for spatial resolution and penetration optimization
- Color/2D line density control

Contrast Imaging

- System optimized for detecting contrast agent signatures
- Contrast modes available on the S5-1 transducer
- iOPTIMIZE one-button patient optimization control and Dynamic Resolution System tuned specifically during contrast studies
- Pulse Inversion contrast imaging available with XRES technology
- Power Modulation (PM), Pulse Inversion (PI), PMPI, Coded Harmonic, Agent Detection Imaging (ADI) and Flash contrast imaging modes
 - Low MI and High MI modes
- Touch screen display timer
- Low MI color flow contrast
- Dual imaging mode for simultaneous fundamental and contrast displays
- S5-1 left ventricular opacification (LVO) for adult cardiology applications
- ECG/timed triggering
- Long loop capture mode during contrast procedures (3-10 minutes)
- QLAB ROI display

Interventional Imaging

- TSI available on selected transducers for optimal performance during interventional and biopsy procedures
- Enhanced needle visualization displays
- CPA and TDI based needle tracking visualization mode
- Biopsy guide selection menus
- Interventional applications

Tissue Harmonic Imaging (THI)

- Second harmonic processing to reduce artifacts and improve image clarity
- Multivariate pulsing including patented pulse inversion phase cancellation technology for maximum detail resolution during harmonic imaging
- Available on all imaging transducers
- Extends high performance imaging capabilities to all patient body types
- Supports SonoCT (Harmonic SonoCT) and XRES modes
- Coded harmonics available with C5-1 in selected modes

Color Power Angio Imaging (CPA)

- Highly sensitive mode for small vessel visualization
- Available on all imaging transducers
- Cineloop review
- Multiple color maps
- Individual controls for gain, filters, sensitivity, echo write priority and color invert
- Dynamic Motion Differentiation
- Adjustable CPA region of interest: size and position
- User-selectable persistence
- User-selectable blending
- Directional Color Power Angio (DCPA)

Automated 3D, 4D and MPR Imaging

- Quantitative 3D volume acquisition with SonoCT supported on V6-2, 3D9-3v and VL13-5 transducers
- Ability to acquire and display up to 30 volumes/sec in 4D mode (transducer dependent)
- High resolution scan and review mode
- Multiple display formats including full screen, 2-up and 4-up for the rendered volume or multiplanar images
- Volume display with surface rendering (transparency, brightness and lighting controls)
- X, Y, Z rotation capability
- Specialized algorithms and maps maximize three-dimensional display
- Individual controls for manipulating the on-screen 3D rendering and display options

System Specifications

- Region of Interest (ROI) trim tools on both volume and multiplanar reconstructed (MPR) views
- Supports SonoCT real-time compound imaging (3D/4D/MPR SonoCT imaging)
- Supports XRES adaptive image processing to reduce noise artifacts
- Able to perform distance, curved distance, ellipse, trace, volume and stacked contour volume measurements

Freehand 3D Volume and MPR Imaging

- Qualitative grayscale volume acquisition supported on all imaging transducers
- Volume display with surface rendering (transparency, brightness, and lighting controls)
- Multiplanar view display
- Specialized algorithms and maps maximize three-dimensional display
- Trim tools on both volume and multiplanar reconstructed (MPR) views
- Supported by SonoCT and XRES modes to reduce noise artifacts
- Resize control adjusts for different sweep speeds

Spatio-Temporal Image Correlation (STIC) Imaging

- Available on V6-2 transducer
- Allows automated volume acquisition of fetal cardiac cycle
- 2D and 3D Color
- CPA and Directional CPA (DCPA)
- Default 25 degree elevation angle
- User configurable acquisition time
- Ability to stop acquisition and return to standby
- Ability to accept or reject detected heart rate
- Compatible with QLAB quantification software

Panoramic SonoCT Imaging

- Real-time extended field-of-view composite imaging, acquired in fundamental or SonoCT mode
- Able to acquire composite image in XRES mode
- Ability to back up and realign the image during acquisition
- Full zoom, pan, Cineloop review and image rotation capabilities
- Auto fit of composite image
- User can measure distance, curved-linear distance and area in review mode with distance marker displayed via skin-line ruler
- User can display or remove skin-line ruler
- Measurements can be made on individual frames during Cineloop review
- Scaling information will be included for connectivity prints allowing for measurements on a workstation
- Available on linear and curved array transducers

Work Flow

Protocols with SmartExam

- Exam guide with on-screen display
- Required views based on exam type
- SmartExam—customization
 - Creates a protocol as the user performs an exam
 - Saves all annotation, body markers and labeled measurements defined in each view
 - Records modes used to capture each view
 - Captures the acquisition method (print, capture, 3D dataset) in each individual view
 - Provides user ability to pause and resume recording process if needed
 - Allows user to edit views before finalizing the new protocol
- Fully customizable protocol capability for any clinical application supported on the system with flexibility to conduct the examination protocol in any sequence
- Preset protocols for abdominal, vascular, and gynecological exams based on industry and accreditation guidelines
- Automatic launching of annotation and body marker icon on required views
- Ability to automatically launch modes (2D, 3D, Color Modes, Doppler, Dual, Color Compare) defined in a protocol
- Ability to pause and resume Protocol function at any time
- System analysis capabilities supported in all defined protocols
- Custom protocol transfer between iU22 systems

Stress Echo Protocols

- Acquisition of single-frame or full-motion digital clips in any mode (including 2D, color flow, power Doppler, etc.); type of image to be acquired may be changed on the fly by the operator as needed
- Gain Save adjusts automatically to different views
- Automatically saves your preferred control settings – such as MI (Mechanical Index), Gain and Depth – for each view while acquiring resting images
- At immediate post-exercise, system automatically retrieves saved settings for each view
- Allows different gain profiles for parasternal LAX and SAX views, AP4 and AP2 views
- Length of acquired images is user-adjustable between 1 and 20 seconds
- Ability to acquire routine cardiac images in timed and/or R-R interval clip (varies with selected compression ratio and available system memory)
- For timed acquisition, the system can start acquisition on the R-wave if the ECG is active and an R-wave is present
- Default Stress Protocols

System Specifications

- These default protocols may not be edited but may be used as the basis of a user defined protocol.
 - Factory-provided protocols include:
 - Two Stage Exercise Stress
 - Four Stage Pharmacological Stress
 - Three Stage Exercise Stress (Bicycle)
 - Four Stage Quantitative
 - Wall Motion and Contrast
- User Defined Stress Protocols
 - Utility for creation of user-defined protocols and editing of existing protocols for acquisition of stress and routine images, allows protocols to be defined to do any or all of the following:
 - Support between 1 and 10 stages
 - Support user-defined stage names
 - Support between 1 and 40 views per stage
 - Support user-defined view names
 - Prompt for a particular stage and view
 - Assign stage and view names
 - Set clip length for each image or group of images
 - Set the number of cycles/beats for each image
 - Define prospective, retrospective, or multi-cycle/full disclosure acquisition
 - Define the capture format of each image or group of images
 - Define the default replay mode for each protocol
 - Enable or Disable Accept prior to store
 - Set Mode Acquisition for each view
 - Support for up to five modes
 - Save user-defined protocols within a preset
 - Save user-defined protocols to removable media for import onto separate systems at the same software level
 - Modify protocols during use
 - Add stages at any point after the current stage
 - Change the name of a stage at any point up to acquisition of the first image of the stage
 - Add views to any non-completed stages
 - Change the name of a view at any point up to the acquisition of that view
 - Save the modified protocol (it will not be automatically saved)

Volume Imaging Solutions for Connected Radiology Departments

- Customizable to your workflow
 - Fast, one-button press volume acquisition and on-cart review
 - Advanced volume and MPR visualization with QLAB GI 3DQ
 - iSlice and thick slice on cart
 - Capability to export freehand and mechanically acquired 3D grayscale data for visualization on most PACS in a stacked “fly-through” manner (like CT/MR)
- Off-cart evaluation of volume data on a multimodality ViewForum clinical workstation
 - Powerful ViewForum 3D manipulation tools including volume rendering, MPR, MIP, Slab Viewing (thick slice), 3D orientation graphics
 - Advanced 3D visualization with QLAB GI 3DQ on ViewForum including ability to handle 3D color flow and xMATRIX data
 - Orientation labels feature for spatial orientation of 3D data sets
 - Adult orientation labels for non-fetal applications
 - Fetal orientation labels for fetal applications

QuickSAVE Feature

The system provides the ability to quickly save preferred system settings as individual exam types

- Up to 45 QuickSAVE exams can be created per transducer
- Saved parameters include virtually all imaging parameters as well as color box size
- QuickSAVE exams can be copied to DVD and transferred to other systems of like configuration

Control Panel and User Interface

- Easy-to-learn graphical user interface
- Ergo-centric design of primary controls readily accessible and logically grouped
- Tri-state control panel lighting (Active, Available and Unavailable)
- Ambient lighting control for optimal image viewing in both light and dark environments
- Full color touch screen for secondary controls
- Dual function mode switch and independent gain controls for 2D, CPA, M-mode and color, PW, CW Doppler
- 8-slide pot control adjustment of TGC curve
- iSCAN control for 2D/Doppler automatic optimization
- iFOCUS intelligent focusing control
- High Definition/Pan Zoom control
- Freeze control
- Programmable Print control
- Transducer Selection and Tissue Specific Imaging control
- Report and Review controls
- Protocol selection control

Display Annotation

- On-screen annotation of all pertinent imaging parameters for complete documentation, including transducer type and frequency, active clinical options and optimized presets, display depth, TGC curve, grayscale, color map, frame rate, compression map value, color gain, color image mode, hospital name and patient demographic data

System Specifications

- User selectable display of patient birth date or user ID
- Fixed position title area for consistent annotation
- Annotation data and patient name can be turned off (hidden) for generating images used in publication and presentation
- Sector Steering Icon for endocavitary transducers
- Scan plane orientation marker
- User selectable Depth Scale display
- Real-time display of Mechanical Index (MI)
- Real-time display of Thermal Index (TIb, TIc, TIs)
- Multiple trackball-driven annotation arrows
- Pre-defined body markers, supported in dual imaging format
- Doppler baseline Invert in Live and Frozen imaging
- TGC curve (user selectable On/Off display)
- TGC values (On/Off display)
- Tool Tips provides a brief description of the abbreviated on-screen image parameters
- Informative Trackball arbitration prompts
- Thumbnail display of images printed/stored
- Calculations Results and Analysis labels
- Graphical tabs that allow navigation to other analysis features
- Network and connectivity icons to allow instant feedback about network and printer conditions
- Cineloop frame number display
- Cineloop bar with Trim Markers
- Prompt Region for informational message display
- Contrast specification
- Protocol procedure list with status

Image Presentation

- Up/down
- Left/right
- Multiple duplex image formats (1/3-2/3, 1/2-1/2, 2/3-1/3, 50/50 and full screen)
- Depth from 1 cm to 38.5 cm (transducer dependent)

Cineloop Review

- Acquisition, storage in local memory, and display in real-time and duplex modes of up to 2,200 frames of 2D and color images or up to 48 seconds of Doppler data and M-mode for retrospective review and image selection
- Trackball control of image selection
- Variable playback speed
- Trim capability of 2D data

- Available in all imaging modes plus:
 - Panoramic imaging
 - 3D imaging
 - Independent control of 2D image or spectral data in Duplex mode
 - Simultaneous control of 2D and spectral data in Simultaneous mode
- On-screen display of current 2D frame number

Connectivity

- Standard connectivity features
 - Local Print to on-board or off-board video printers
 - Page Report Print
 - DICOM Print
 - Image and waveform export to removable media (DVD/CD/USB)
 - Export of report data to off-line analysis computer programs
 - Gigabit ethernet output
 - Append to Study
 - Pixel spacing
- NetLink connectivity option
 - Image and waveform export to network storage servers
 - DICOM Worklist with RIS support and automatic patient demographic entry
 - Performed Procedure Step (PPS)
 - Storage Commit (SC)
 - Structured Reporting (SR) includes OB, GYN and Vascular
 - Append to Study
- DICOM compression options
 - Up to 2200 frames per acquisition
 - Image and waveform export to network storage servers
 - DICOM Worklist with CIS support and automatic patient demographic entry
- Image network display choices (5)
 - Legacy, CRT, LCD, GDSF, CRT2
- Native data and native data compression attached to DICOM
 - 3D volume data set attached to DICOM image
 - Ability to crop, resize, gain, compression, automated border tracking, color baseline, 3D vision control, colorize, color suppress, B/W suppress, XRES and 3D quantification
 - Scrolling Doppler acquisitions
 - Storage Commit (SC)
 - Structured Reporting (SR) for Ob/Gyn, cardiac and vascular
 - Multiple Archive Server support
 - DICOM Append
 - 3D Clips in DICOM format

System Specifications

- Send Images
 - After end of exam (batch send)
 - After each acquire
- Send on demand
- Digital Media Exchange – CD/DVD (standard)
 - The system supports specific DVD and CD media, and allows the following capabilities:
 - Read-only CD formatted specifically for the system
 - Read and Write (single session) to CD (CD+R)
 - DVD Read-only (DVD+R)
 - DVD Read + Write (single session) (DVD+RW)
- USB Device
 - Export image data and OB trending information to USB device
 - Import image data and OB trending information from USB device to compatible iU22 system
- Data storage formats include DICOM, JPG (full frame images) and AVI (motion clips); full frame images are non-compressed
- Native data storage for TDI and volumetric exams
- User selectable compression is available for motion clip storage
- DICOM images stored on disk can be recalled on the ultrasound system
 - Scaling data is available to allow measurements
- JPG images and AVI clips can be recalled on off-line viewing stations
- On-board patient exam storage (standard)
 - Direct digital storage of B/W and color loops to internal hard disk drives
 - Combined 160 gigabyte storage capacity
 - Storage capacity of approximately 350 patient exams (assuming 40 images, 6 seconds of clips and reports per exam)
 - Fully-integrated user interface
 - User configurable “auto delete” capability
 - On-screen recall, measurement and text editing
 - Exam directory
- Digital navigation link
 - Provides real-time digital streaming of rich 2D ultrasound data to the Traxtal PercuNav system
- 800 x 600 loop export
- UpLink remote diagnostics capability
 - Remote diagnostics for faster, more accurate equipment evaluation
 - Allows remote system status verification
 - Supports routine preventative maintenance
 - Supports remote upgrade capability

Measurements and Analysis

Measurement Tools and General Description

- 2D distance
- 2D circumference/area by ellipse, continuous trace, trace by points
- Auto conversion of Distance to Ellipse
- 2D curved-linear distance
- 2D angle: intersection of two lines
- 3D: ellipse and distance on 2 MPR views
- 3D: stacked contours on one MPR
- M-mode distance (depth, time, slope)
- Manual Doppler distance
- Manual Doppler trace
- Time/slope measurements in Doppler and M-mode
- High Q Automatic Doppler Analysis (General Imaging only)
 - Doppler values including PI, RI, S/D indices
- Volume flow
- 2D volume (2 volume methods)
- Heart rate
- Trackball-controlled electronic measurement calipers: 8 sets
- User-defined protocols, measurements and equations
- On-the-fly measurement labels
- Fully editable results data sheet
- Integrated patient exam report
- Delete last measurement
- Embed image and graphs in report

Quantification

QLAB quantification software (version 7.0)

- On-cart and off-cart access
- Customize capabilities via optional plug-ins
- General Imaging 3D Quantification (GI 3DQ) Plug-in
 - 3D/4D viewer for Ob/Gyn and General Imaging including interventional applications
 - Review 3D/4D, color 3D as well as color fetal STIC
 - Multiplanar reconstruction (MPR)
 - iSlice precision volumetric slicing capability
 - Displays 2D/color slices from static or live volume
 - User-selectable slice display: 4, 9, 16 or 25
 - User-selectable interval spacing
 - User-selectable slicing depth
 - User-selectable slicing source (x, y or z)
 - Free rotation of any source
 - Full Cineloop review control
 - 2D grayscale display adjustments
 - Color display adjustments
 - Zoom control

System Specifications

- Cine/pan slice control through volume
 - User-selectable image storage
 - Quick launch to measurements
 - Auto ruler display
 - Compatible with freehand, automated and xMATRIX volumes
 - Thick slice imaging
 - User-adjustable slice thickness and depth
 - Variable thick slice display adjustments with present vision settings
 - 2D and 3D measurement tool including distance, area, angle, stacked and auto contour and ellipsoid measurements
 - Vascularization Index, Flow Index and Vascularization Flow Index results on 3D color mode datasets
 - Contrast Timer marker on iU22 datasets saved with contrast timer
 - Orientation labels display on iU22 datasets saved with orientation label marker
 - XRES speckle noise reduction of MPR and volume displays
 - Assisted auto-trace volume measurement tools for stacked contours and ellipse methods
 - Edge detection selection for hypoechoic or high contrast targets
 - Intima Media Thickness (IMT) Quantification Plug-in
 - Automated assessment of the IMT on user selected frames
 - For carotid and other superficial arteries
 - MicroVascular Imaging (MVI) Plug-in
 - Integration and processing of images in contrast specific imaging mode providing detection and display of very low velocity flows of very low signal amplitude
 - Motion compensation for multiframe objects
 - Region of Interest (ROI) Quantification Plug-in
 - Pixel intensity analysis, data types: echo, velocity (color) or power (angio)
 - Up to 10 user defined regions
 - Thumbnail display of frames for easy trimming
 - TDI velocity timing measurement
 - Log/linear data display selection
 - Smoothed data display option
 - Vascularization Index, Flow Index and Vascularization Flow Index results on color mode files
 - Motion compensation for multiframe objects
 - Strain Quantification (SQ) Plug-in
 - For evaluation of regional myocardial function, assessment of synchronicity and guidance during bi-ventricular pacing procedures
 - Tissue Doppler Imaging (TDI) velocity quantification
 - Measures the myocardial velocity and derives the strain rate and strain along user-defined M-lines
 - User defined M-Line motion to follow the myocardial motion
 - User-selectable waveforms for optimal sub-region visualization
 - Curve processing mode
 - TDI velocity timing measurement
 - Cardiac 3D Quantification (3DQ)
 - Multiplanar reconstruction (MPR) views
 - Distance and area calculations
 - LV mass, LV ED and ES volumes, ejection fraction by method of disk using biplane Simpson
 - Cardiac Time Motion Quantification (TMQ)
 - Assess Global, Regional/Segmental, and Annular (valve) cardiac function using tissue (speckle) tracking with the S5-1 transducer
 - Non-directional (Area cm², Volume ml, Speed cm/s)
 - Directional (Fractional Shortening %, Strain %, Strain Rate l/s)
 - Time motion annular displacement (TMAD) quantification
- ## Clinical Option Analysis Packages
- Cardiac analysis
 - Volume by area/length method
 - M-mode ejection fraction (via Teichholz or cubed method)
 - Novel 3-point adjustable Simpson's template
 - Simpson's biplane and single plane volume and ejection fraction
 - Area, length, volume and ejection fraction
 - LV mass
 - 2D all points
 - M-mode all points
 - Peak velocity
 - Maximum and mean pressure gradients
 - Pressure half time
 - E/A ratio
 - D/E Slope
 - Continuity equation
 - Diastolic function
 - Cardiac output
 - Acceleration time
 - Heart rate
 - Vascular analysis
 - Right and left carotid artery protocols
 - ICA/CCA ratio
 - Bilateral lower extremity Arterial and Venous labels
 - Bilateral upper extremity Arterial and Venous labels
 - Percent diameter and area reduction
 - Vascular graft measurement package
 - User comments
 - High Q automatic Doppler analysis
 - OB analysis
 - Fetal echo application
 - Fetal biometry (up to quintuplets)
 - Biophysical profile

System Specifications

- Amniotic fluid index
- Early gestation
- Fetal long bones
- Fetal cranium
- Other OB measurements
 - 2D echo
 - Fetal heart M-mode
 - Fetal Doppler
 - Fetal echo
- Gynecology/Fertility
 - Uterine volume
 - Right and left ovary volumes
 - Right and left follicles (10)
 - Endometrial thickness
 - Cervical length
- Abdominal vascular
 - Labels for all major abdominal arteries and veins
 - Left and right segmentation for kidneys
- General imaging
 - General
 - User defined labels
- Prostate
 - Prostate gland
 - d:D ratio
- Pediatric
 - General
- Small Parts
 - General
 - Breast with right and left protocols for up to 5 lesions per breast

High Q Automatic Doppler Analysis

- Automatic real-time and retrospective tracing of:
 - Instantaneous peak velocity
 - Instantaneous intensity weighted mean velocity
- Automatic real-time display of (user selectable up to 6):
 - Volume flow
 - Time-averaged peak velocity
 - Time-averaged mean velocity
 - Resistive index
 - Pulsatility index
 - Systolic/diastolic ratio
 - Acceleration/deceleration times
 - Illustrated High Q

System Features

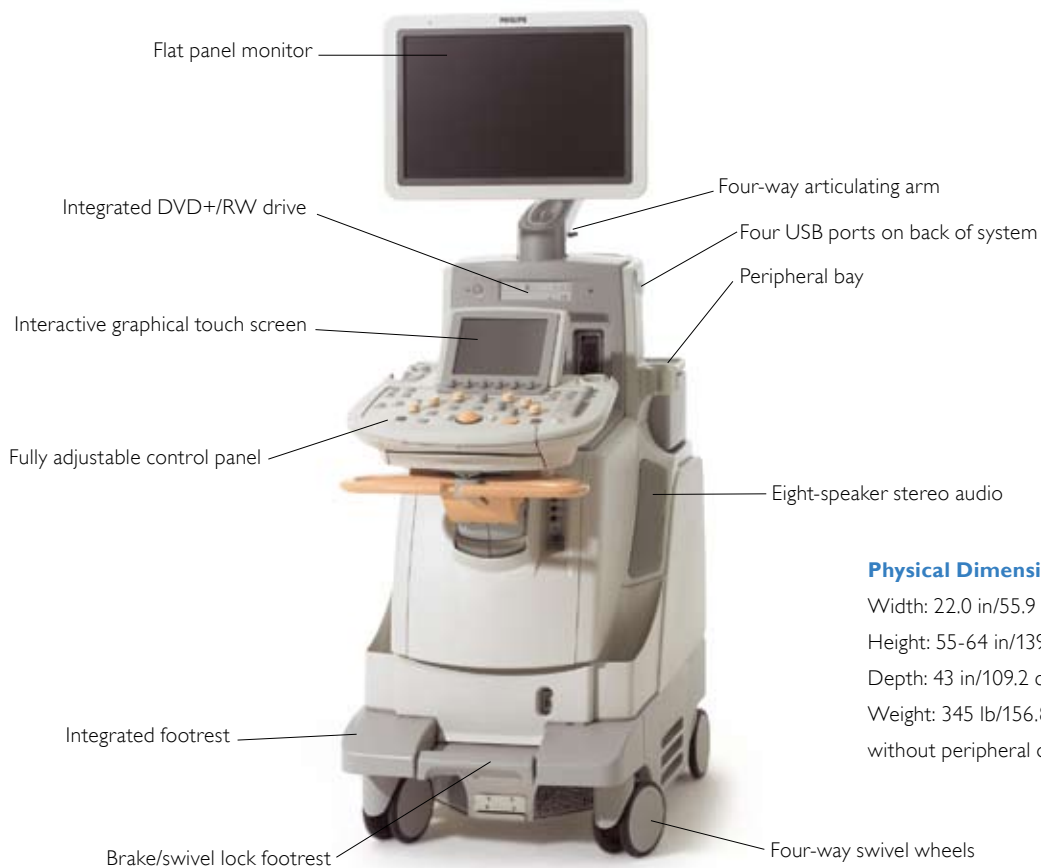
System Cart

- State-of-the-art ergonomic design for comfort and convenience
- Easy maneuverability and mobility
 - Wheel-lock and monitor adjustments facilitate bedside exams
- Control panel
 - Articulation facilitates optimal positioning
 - Up and down 6.5 in/16.5 cm
 - Rotates 30° ($\pm 15^\circ$ from center)
 - Side-to-side slide movement, 6 \pm 3 inches/15.2 \pm 7.6 cm
 - Retractable, lighted alphanumeric keyboard
 - Palm rest
- Flat panel LCD display monitor
 - 20 inch wide format high resolution flat panel TFT/SIPS display
 - High contrast ratio >600:1
 - Extended viewing angle >170° (horizontal and vertical)
 - Response time: <16 ms
 - Virtually flicker-free technology for reduced eyestrain
 - Ambient lighting control for optimal image viewing in both light and dark environments
 - Mounted on fully articulating extension arm
 - Four-way articulation with range of height adjustment from 55 to 61 in/140 to 155 cm
 - Side-to-side lateral adjustment
 - Nearly infinite positioning adjustments: height, swivel and tilt
- Easily accessed transducer connector ports and DVD media drive
- Transducer and gel bottle holders (removable for easy cleaning)
- Mobility through high quality, shock-absorbing casters with foot pedal controls for:
 - 4-wheel swivel
 - 2-wheel swivel lock
 - 2-wheel brakes
- Digitally-enhanced 8-speaker high fidelity stereo output
- Integrated footrests
- On-board storage in convenient side bins and accessory tray
- Universal peripheral bay provides easy access for up to three on-board hardcopy/documentation devices
- Built-in A/C line conditioner provides isolation from voltage fluctuations and electrical noise interference
- Four high-capacity fans with automatic speed adjustment to optimize cooling efficiency with minimal audible noise

Physio

- One 3-lead ECG input
 - Gain, sweep rate and display position controls
 - Automatic Heart Rate calculation and display
 - Fault condition display
 - Cineloop locator displayed on ECG trace

System Specifications



Physical Dimensions

Width: 22.0 in/55.9 cm

Height: 55-64 in/139.7-162.6 cm

Depth: 43 in/109.2 cm

Weight: 345 lb/156.8 kg

without peripheral devices

Peripheral Devices/Exam Documentation

- The system supports up to three on-board peripheral devices (excluding report printers)
- Super VHS VCR (USB controlled via system user interface)
- Small format digital color printer (USB)
- Small format digital B/W printer (USB)
- Large format external color printer
- Support for various Hewlett-Packard brand color and monochrome report printers (USB, externally mounted)
- Export of measurement and analysis data to off-line reporting software packages (USB)

Electrical Power/Video Parameters

- 100V-127V, 50Hz/60Hz – NTSC
- 220V-240V, 50Hz/60Hz – NTSC and PAL
- Integrated A/C line conditioning and battery back-up system
- Power consumption:
750VA - 900VA depending on system configuration

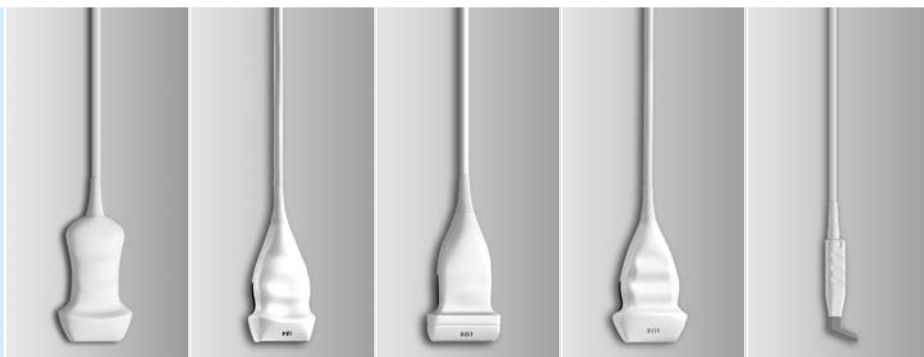
Safety Requirements

- Electromechanical standards met
 - C22.2 No. 601.1, Canadian Standards Association, Standard for Medical Electrical Equipment
 - JIS-T-0601-1, Japanese Standard for Medical Electrical Equipment
 - EN 60601-1, European Norm, Safety of Medical Electrical Equipment
 - EN 60601-1-2 European Norm, Collateral Standard: Electromagnetic compatibility
 - EN 60601-2-37 European Norm, Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
 - UL 60601-1 Underwriters Laboratories Standard for Medical Electrical Equipment
- Agency approvals
 - Canadian Standards Association (CSA)
 - CE Mark in accordance with the European Medical Device Directive issued by British Standards Institute (BSI)
 - Japanese Ministry of Health, Labor and Welfare (in process)

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Transducers



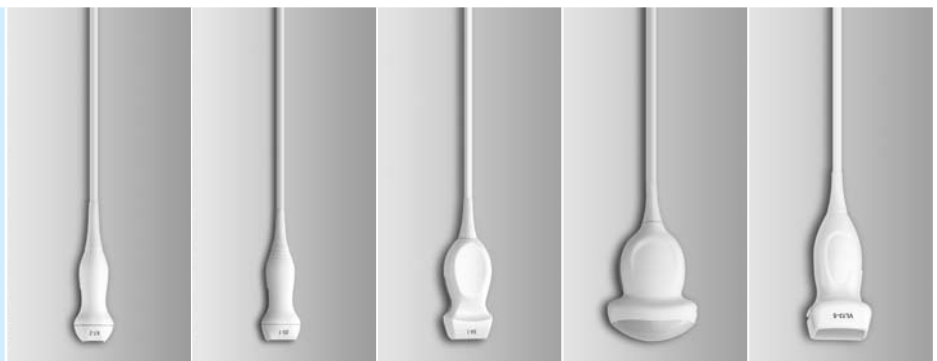
Name		L9-3	L8-4	L12-5	L17-5	L15-7io
Type of array		Linear	Linear	Linear	Linear	Linear
Number of elements		160	128	256	288	128
Field of view		38 mm	38 mm	50 mm	38 mm	23 mm
Broadband frequency range		9-3 MHz	8-4 MHz	12-5 MHz	17-5 MHz	15-7 MHz
Application	Exam type					
Abdominal	General					
	Renal					
	Vascular					
	Difficult					
Obstetrics	Early OB					
	General OB			●		
	Fetal echo					
Gynecology	Pelvis					
	Fertility					
Cardiology	Adult					
Vascular	Carotid	●	●	●	●	
	Arterial	●	●	●	●	
	Venous	●	●	●	●	
	Abdominal					
	TCD					
Pediatric	Abdomen			●	●	
	Hip			●	●	
	Neonatal cephalic					
Small Parts	Superficial			●	●	●
	Thyroid		●	●	●	
	Testicle			●	●	
	Breast	●	●	●	●	
Musculoskeletal	Superficial			●	●	●
	General		●	●		
Urology	Prostate					
	Bladder					
	Renal					
Contrast						
Surgical	Vascular					●
	Epicardial					
Biopsy guide		Dual angle, reusable	Dual angle, reusable	Reusable	Reusable	

Transducers



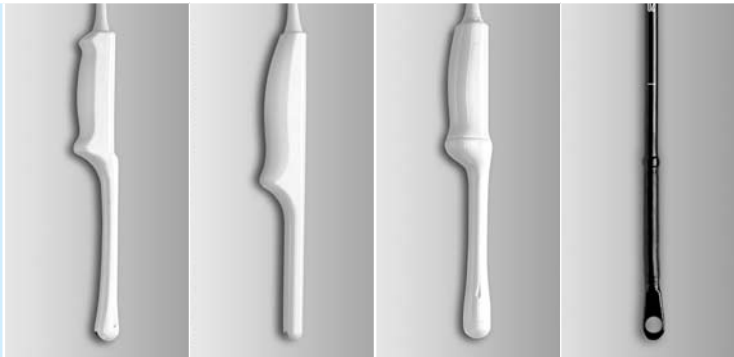
Name		C5-1	C5-2	C8-5	C9-4	X3-1
Type of array		Curved	Curved	Tightly curved	Curved	xMATRIX
Number of elements		160	128	128	192	2400
Field of view		70°	75°	90°	65°	90°
Broadband frequency range		5-1 MHz	5-2 MHz	8-5 MHz	9-4 MHz	3-1 MHz
Application	Exam type					
Abdominal	General	●	●		●	
	Renal	●	●		●	
	Vascular	●	●			
	Difficult	●				
Obstetrics	Early OB	●	●		●	
	General OB	●	●		●	
	Fetal echo	●	●		●	
Gynecology	Pelvis	●	●		●	
	Fertility	●	●			
Cardiology	Adult					●
Vascular	Carotid			●		
	Arterial			●		
	Venous			●		
	Abdominal	●	●			
	TCD					
Pediatric	Abdomen	●	●	●	●	
	Hip			●		
	Neonatal cephalic					
Small Parts	Superficial					
	Thyroid					
	Testicle					
	Breast					
Musculoskeletal	Superficial					
	General					
Urology	Prostate					
	Bladder					
	Renal	●	●			
Contrast					●	
Surgical	Vascular					
	Epicardial					●
Biopsy guide		Four angle, reusable	Reusable	Reusable	Dual angle, reusable	

Transducers



Name		X7-2	S5-1	S4-1	V6-2	VL13-5
Type of array		xMATRIX	Sector	Sector	Curved	Linear
Number of elements		2500	80	96	192	192
Field of view		90°	90°	90°	66°	
Broadband frequency range		7-2 MHz	5-1 MHz	4-1 MHz	6-2 MHz	13-5 MHz
Application	Exam type					
Abdominal	General			●		
	Renal			●		
	Vascular			●		
	Difficult					
Obstetrics	Early OB				●	
	General OB			●	●	
	Fetal echo	●		●	●	
Gynecology	Pelvis			●		
	Fertility					
Cardiology	Adult		●			
Vascular	Carotid					●
	Arterial					
	Venous					
	Abdominal		●	●		
	TCD		●			
Pediatric	Abdomen	●				
	Hip					
	Neonatal cephalic	●				
Small Parts	Superficial					
	Thyroid					●
	Testicle					
	Breast					●
Musculoskeletal	Superficial					
	General					
Urology	Prostate					
	Bladder					
	Renal		●			
Contrast		●				
Surgical	Vascular					
	Epicardial					
Biopsy guide			Dual angle, reusable	Dual angle, reusable	Dual angle, reusable	Dual angle, reusable

Transducers



Name		C8-4v	C9-5ec	3D9-3v	S7-2omni
Type of array		Tightly curved	Tightly curved	Tightly curved	Sector TEE
Number of elements		128	128	128	64
Field of view		135°	147°	130°	8.64 mm
Broadband frequency range		8-4 MHz	9-5 MHz	9-3 MHz	7-2 MHz
Application	Exam type				
Abdominal	General				
	Renal				
	Vascular				
	Difficult				
Obstetrics	Early OB	●	●	●	
	General OB	●	●	●	
	Fetal echo	●	●	●	
Gynecology	Pelvis	●	●	●	
	Fertility	●	●	●	
Cardiology	Adult				●
Vascular	Carotid				
	Arterial				
	Venous				
	Abdominal				
	TCD				
Pediatric	Abdomen				
	Hip				
	Neonatal cephalic				
Small Parts	Superficial				
	Thyroid				
	Testicle				
	Breast				
Musculoskeletal	Superficial				
	General				
Urology	Prostate		●		
	Bladder	●			
	Renal				
Contrast					
Surgical	Vascular				
	Epicardial				
Biopsy guide		Disposable	Disposable	Disposable	

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