GE HealthCare

Voluson Signature 20

It's time to accelerate what's possible. Move fast, move forward with the Voluson™ Signature 20. This high-performing ultrasound system is engineered with expert-level architecture to power best-in-class imaging and advanced applications for extreme efficiency. Personalize your Voluson Signature 20 to support how you work and leverage the Voluson ecosystem of support and education to ensure you get the most out of your system.

Highlights

- Voluson Unity Architecture
- High resolution 23.8" LCD monitor
- Lightweight and maneuverable
- Radiant*flow*™ & Slow*flow*HD
- Auto*live*
- Battery pack
- Sleep Mode – Fast Wake – Fast Boot-up
- Probe Favorites
- HD*live*™ technologies
- Advanced VCI with OmniView
- Uterine Trace & Spine Trace
- SonoAVC™ & Auto Caliper measurements for follicles
- Advanced STIC
- AI based image guidance with SonoLyst**live*
- AI based functionality with *fetal*HS, SonoCNS, SonoPelvicFloor 2.0
- SonoGYN with Fibroid Mapping & Uterine Trace
- Automation technologies with SonoBiometry, SonoNT™, SonoIT
- Scan Assistant with SonoLyst image recognition
- XDclear™ Probes
- 3D Printing capabilities
- Voluson Image Portal
- Cable Management
- Reminders
- Quick Setup Wizard
- Vscan Air™ CL integration

General Specifications

Dimensions / Weight / Audible noise emission	
Height (minimum)	139 cm (54.7 in)
Height (maximum)	179 cm (70.5 in)
Adjustable	Mechanical
Width	49 cm (19.3 in)
Depth	87.5 cm (34.4in)
Weight (no Peripherals)	73 kg (160.9 lbs.)
Max. audible noise emission	≤65 dBA
Typical audible noise emission (in a noise-reduced setting)	≤37 dBA (measured at normal user-location in standard working mode)

Power supply	
Voltage	100 – 240 V~
Frequency	50/60 Hz (+/-1Hz)
Power	Max. 650 VA incl. all options, typical power consumption ~195VA without peripherals
Thermal Output	max. 2217 BTU/h typ. 665 BTU/h
Battery Pack (Option)	• Battery Pack: up to 75 min scanning • Battery Pack Extended: up to 150 min scanning • longer in standby [sleep]

Console design	
4 Active universal pinless imaging probe ports	
Integrated cable management	
4 Wheels	Diameter 12.5 cm (4.9 in)
Individual wheel locks, direction lock on rear wheel	
Rear handle	
Ambient light for probe ports	
Task lamp under user interface	
On-board storage for peripherals	

Operating System	
Operating System: Windows** 10 Iot Enterprise 64 bit	
Integrated SSD	500GB (optional 1TB SSD)

User Interface

Operating panel
Adjustable User Interface: • Rotation: adjustable +/- 30° from center • Height adjustable + 250 mm (9.8 in)
6 integrated probe holders including dedicated horizontal transvaginal probe holder
Gel holder
Ergonomic hard key layout including trackball
User adjustable light scheme
4 programmable buttons for print/save/send
4 programmable probe favorite keys for immediate access to frequently used probes, applications and user settings
4 user configurable buttons
Integrated microphone

Touch screen	
14” high resolution color LCD screen	
Resolution	Full HD 1920 x 1080 pixel
Aspect ratio	16:9
Multi touch interactive dynamic software menu	

Touch screen (continued)
Haptic functionality (adjustable)
Brightness adjustable
Capable to display 2D/3D/4D Ultrasound images in real time

Monitor	
23.8” high resolution LCD Display with HDMI interface	
Resolution	Full HD 1920 x 1080 pixel
Image Size	Standard, XL, Full screen
Aspect ratio	16:9
Max. display brightness	300 cd/m²
Contrast ratio	1000 : 1
Response time	14 ms
Fully articulating monitor arm • Tilt angle: min. +25°/-68° • Rotate: +/- 90° • Horizontal range of motion: >350 mm (13.7 in) • Vertical range of motion: > 150 mm (5.9 in)	
Brightness settings: Extra Dark, Dark, Semi Dark, Light, Extra Light Room	
Color temperature setting: warm and cold	

System Overview

Exam types	
Abdominal	Pediatrics
Obstetrical	Transrectal
Gynecological	Cardiology
Small Parts and Breast	Cephalic
Vascular	Musculoskeletal (MSK)

Operating modes

B-Mode (2D)

Color Doppler Mode (CFM)

Power Doppler Mode (PD), including HD-Flow™

M-Mode (M), including anatomic M-Mode (AMM)

Pulsed Wave Doppler (PW) with automatic HPRF, including duplex and triplex capabilities

Continuous Wave Doppler imaging (CW)

Tissue Doppler Mode (TD) and PW-Tissue Doppler Mode

B-Flow™ (BF)

Slow*flow*HD

Combination modes: M/C, M/HD-Flow, M/TD, PW/C, PW/HD-Flow, PW/PD, PW/TD

Extended View (XTD View)

Compression & Shear Wave Elastography††††

Contrast Imaging Mode†, including Quantification Capabilities

Volume Mode (3D/4D):
- 3D Static
- 4D Real Time
- VCI-Omniview
- VCI-A
- Spatio- Temporal Image Correlation (STIC)
- 4D Biopsy

Static 3D Mode:
- B Mode only
- B + Power Doppler Mode
- B + CFM Doppler Mode
- B + HD-Flow Mode
- B + CRI
- B + CRI + CFM
- B + CRI + PD
- B + CRI + HD-Flow
- B + B-Flow

User management and logging functionality

Multiple Users with individual log on credentials

Different and adjustable access levels

LDAP Interface

Enhanced Audit Trail and Usage Log

Privacy and security functionality

Hard disc AES Encryption with 256-bit length

Whitelisting

Encrypted DICOM Communication Capability (TLS)

Encryption and Data Anonymization Export Capability

All ports, services and shared resources that are not required for the intended use are disabled

Operating System Access disabled

Deactivation of USB ports possible

Transducer types

Phased Array – Active Matrix (1.5D)

Convex Array

Microconvex Array

Linear Array – 1D and Active Matrix (1.25D)

Volume probes 4D:
- Convex and Microconvex Array

Scanning methods

2D Electronic Sector/Convex/Linear

3D/4D Mechanic Volume Sweep

System standard features

B-Mode (2D)

Color Doppler Mode (CFM)

Power Doppler Mode (PD)

High Definition Power Doppler (HD-Flow)

M-Mode (M), including Anatomical M-Mode (AMM) with up to 2 cursors

Pulsed Wave Doppler (PW)

Tissue Doppler (TD)

B-Flow

Coded Harmonic Imaging with Pulse Inversion Technology, operating on multiple frequencies, user selectable on/off

Automatic Optimization (B-Mode, PW Doppler)

Auto*live* - Automatic gain optimization of B-Mode in real-time

Auto TGC

AutoScale (PW Doppler and Color Doppler PRF)

Augment scanning mode

Shadow Reduction

SRI (Speckle Reduction Imaging)

CrossXBeamCRI™ (Compound Resolution Imaging, CRI)

Wide Sector (max. Angle)

Flow Profiles for CFM/HDF/PD/PW and CW

3D/4D Package (3D/4D Activation, SonoRender*live*, TUI, 4D Biopsy)

HD*live*

XTD

SonoLyst*live* (includes SonoLystIR/X)

HD Zoom & Pan Zoom

Steering

Virtual Convex (Trapezoid Image), also with CrossXBeamCRI

Beta-View

Histogram Analysis with up to 3 user adjustable ROIs with comparative analysis on complex curves

Biophysical profile timer

Scan Assistant:
- Includes measurements, annotations and fetal anatomy and gynecology worksheet entries
- Performs predefined mode changes, preset selection and screen layout changes
- Supports display of user selected reference images
- Standardize image sequence upon DICOM transfer

Measurement, Calculations and Worksheets/Report for:
- OB
- GYN
- Abdominal
- Transrectal
- Vascular
- Cardio
- Small Parts
- Pediatrics
- Cephalic
- Musculoskeletal

Multigestational Calculations

SonoBiometry (HC, BPD, AC, FL, HL, SonoNT & SonoIT)

SonoFHR, Fetal Heart Rate

Real-time automatic Doppler calculations

Biopsy - user programmable needle guidelines

DICOM 3.0 Connectivity

GYN IOTA LR2, Simple Rules and ADNEX Model††††

GYN IETA Protocol & Report††††

GYN IDEA Protocol & Scan Assistant Guideline

Patient information database

System standard features (continued)

- Image archive on hard drive
- 3D/4D data compression (lossy/lossless)
- Data export in 3D printable format
- Voluson Image Portal (additional WLAN Adapter required)
- Education videos
- Rear tray user interface
- Rear handle cable hook
- Horizontal TV probe holder
- Fast boot-up

System options††††

Advanced STIC:
- STIC
- STIC M-Mode
- STIC-Flow

- SonoVCAD*heart*™
- Advanced VCI (Volume Contrast Imaging), including VCI-C, OmniView, Uterine Trace and Spine Trace
- HD*live* Silhouette
- HD*live* Flow
- Slow*flow*HD
- Radiant*flow*
- SonoAVC, including SonoAVC*follicle*, *antral*[2.0], *general* and Auto Caliper for follicles
- Labor & Delivery Package incl. SonoVCAD*labor* and SonoL&D
- Coded Contrast Imaging + 3D HyCoSy†
- Compression Elastography
- Shear Wave Elastography††††
- SonoGYN, including Fibroid Mapping and Uterine Trace
- SonoCNS incl. SonoBiometry Brain (Cereb, CM, Vp)
- Inversion
- VOCAL II
- *fetal*HS incl. Cardiac Axis
- Software DVR (USB) Ultrasound Area or Full Screen
- SonoPelvicFloor 2.0
- Advanced Security
- Premium Security (meeting USA DoD requirements)
- Voluson Remote Update
- eDelivery†††† (SW Download)
- Versiound™ Fleet Management (AVURI)††††
- Ophthalmic Artery††††
- Vscan Air Activation††††

OB Package
- Advanced VCI (Volume Contrast Imaging), including VCI-C, OmniView, Uterine Trace and Spine Trace
- Radiant*flow*
- *fetal*HS
- HD*live* Silhouette

Expert OB Package
- OB Package
- SonoCNS
- Advanced STIC

Expert OB/GYN Package
- Expert OB Package
- SonoGYN

GYN Package
- SonoGYN
- Radiant*flow*
- HD*live*Silhouette

System options (continued)

ARM Package
- Advanced VCI (Volume Contrast Imaging), including VCI-C, OmniView, Uterine Trace and Spine Trace
- Radiant*flow*
- SonoAVC, including SonoAVC*follicle*, *antral*[2.0], *general* and Auto Caliper for follicles

- 4DView

Peripheral options

- Gel warmer (integrated in probe holders)
- B&W printer, medical grade (integrated in console)
- Color printer, medical grade (not integrated, with wireless connection or USB)
- Report color printer with network printing capabilities & connection kits for printing reports and images (not integrated)
- Wireless Kit for Color Printer
- ECG Digital Module
- Foot Switch, with programmable functionality
- Barcode Scanner
- Isolated USB Connection
- Ethernet protection cable
- Voluson Cleaning Cloth
- UPS – 115V or 220/230V AC Uninterruptible Power Supply to prevent data/image loss in case of power failure assuring autonomy up to 44 minutes in scanning (may vary depending on battery age)
- Power supply noise filter (EMI Filter)
- External Patient Monitor Set
- Wireless HDMI connection
- Isolation Transformer
- WLAN Adapter (USB)
- Digital Expert Connect
- Battery Pack – up to 75 min of scanning
- Battery Pack, extended – up to 150 min of scanning
- 1 TB SSD Hard Drive
- CW Doppler Option Kit
- Side Drawer
- Rear Basket
- Horizontal IC5-9 TV Probe Holder Insert
- Vertical TV Probe Holder Inserts - Right Side
- Bluetooth Dongle (for Vscan Air CL)
- Vscan Air Activation Kit†††† incl. Vscan Air SW Activation, WLAN Adapter, Bluetooth Dongle and Vscan Air charger installation kit

Displayed information

- Patient name: First/Middle/Last Name, max. 62 characters
- Patient ID: max 32 characters
- Secondary patient ID (Citizen Service Number)
- Accession #: max 16 characters
- Hospital Name: max 30 Characters
- Sonographer
- Gestational age (OB) or LMP (GYN)
- Birth date

Date:
- YYYY/MM/DD
- MM/DD/YYYY
- DD/MM/YYYY

- Time display selectable: 12/24 hours
- Probe name

Displayed information (continued)
Displayed Acoustic Output: • TIS: Thermal Index Soft Tissue • TIC: Thermal Index Cranial • TIB: Thermal Index Bone • MI: Mechanical Index
Frame Rate / Depth
Angle / Zoom
User Preset / Application
B-Mode: • Receiver Frequency • Gain • Dynamic Contrast/Gray Map • Persistence/Edge Enhance • SRI, CRI
M Mode/AMM Mode: • M-Gain • Dynamic contrast • Edge Enhance • Reject • M-Cursor, AMM-Cursor • Time Scale
PW Doppler Mode: • PW-Gain • Angle • Sample Volume Depth and Size • PRF including HPRF • Wall Motion Filter • Doppler Frequency • Velocity or Frequency Scale • Time Scale
Color Flow Imaging Modes: • Color Gain • Frequency • Quality • Wall Motion Filter • Pulse Repetition Frequency • Color Map • Color Scale: kHz, cm/s, m/s • Color Velocity Range • Color Balance Marker • Radiant*flow*/ Slow*flow*HD
3D/4D Mode: • 3D/4D Sub Program • Threshold • Quality • Volume Box Angle • Mix • Acquisition Mode • Compression • VCI: slice thickness • TUI: slice distance (0.5-10mm) • TUI: slice position in overview image • STIC acquisition time • Calculated heart rate for STIC • Orientation Markers
Elastography Mode: • Tx Frequency • Transparency • Velocity Range • Elasto Map • Persistence • Line Density
TGC Curve
Gray Scale bar
Color Scale bar (Mode dependent), showing WMF & Balance
Depth Scale
Focal Zone Marker
Probe Orientation Marker
Cine Frame Number
Recorder, spooler, external monitor, email, ethernet connection, wireless connection and reminder status
Body Marks: >160 types organized in 10 anatomical groups
Measurement results
User information for SW features
ECG Line
Trackball function (Trackball and Trackball buttons)
P-Button and C-Button configuration
Zoom overview image (zoom box position)
Clipboard in adjustable layout
Scan Assistant/Measurement result window
Predefined Biopsy Guide Line
GE HealthCare logo

System Parameters

System setup
User Programmable Presets
Display Languages: English, French, German, Spanish, Portuguese, Italian, Danish, Dutch, Finnish, Norwegian, Swedish, Russian, Japanese, Simplified Chinese
Software Keyboard Languages: English, French, German, Spanish, Italian, Danish, Finnish, Norwegian, Swedish, Russian, Swiss French, Swiss German, Polish, Croatian
eIfU (electronic Instructions for Use) Languages: Bulgarian, Croatian, Czech, Chinese Simplified, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Indonesian, Italian, Japanese, Kazakh, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian, Vietnamese
Free programmable Scan assistant lists including Add, Delete, Edit and Reorder of checklist items
Up to 6300 Programmable Annotations organized in 10 anatomical groups, including a library function and auto-complete
4 programmable Px buttons for documentation preferences like Save, DICOM Send, Print, Check, Cine length, jpeg, etc.
4 programmable probe favorite keys (press & hold) for immediate access to frequently used probes, applications and user settings
4 programmable Cx buttons for different functionality
User configurable items, including but not limited to: • Clinic Name • Display (TGC curve, Screen Lock, Screensaver, Auto Scan Stop, Beeper, 3D/4D Screen Controls) • Trackball speed • Zoom Overview window • DVR recording area • Dim function • Patient Info display • Title bar settings • Start Exam and End Exam configuration • Probe Favorites • Mode Menu • Color Theme (Hard key backlight, Software accents & Trackball color) • Haptics on touch adjustable • Quick access to network profiles • Customized reminders

Measure setup
M&A Setup: Add, Delete, Edit and Reorder of measure items
Application Setup including several parameters of Measurement, Doppler Trace and Calculation presets
Global Setup including several parameters of Measurement, Cursor and Result window presets
Post assign measurements
Magnifier available to help place precise measurements
Auto Sequence measurements

Image processing and presentation
Digital beamformer „Unity Architecture“
10,971,429 system processing channel technology (probe dependent)
Minimum Depth of Field: 0 - 1 cm (Zoom, probe dependent)
Maximum Depth of Field: 0 - 50 cm (probe dependent)
Depth steps: up to 29 (probe dependent)
Confocal imaging
Transmission focus: 1-5 focus points selectable (probe and application dependent)
Focal zone position, up to 10 positions selectable

Image processing and presentation (continued)

Continuous Dynamic Receive Focus/ Continuous Dynamic Receive Aperture for all probes

256 gray levels

16.8 million Colors 24 bit

Up to 393 dB Dynamic Range

Image reverse: Right/Left

Rotation: 0°, 90°, 180°, 270°

Cine features

- Prospective or Retrospective Cine Mode
- Store 3D sweep to Cine
- Single/Dual/Quad image Cine Display
- Cine Gauge and Cine image number display
- Cine Review Loop
- Selectable Cine Sequence for Cine Review (by Start Frame and
- End Frame)
- Side Change in dual Cine Mode
- Measurements /Calculations & Annotations on CINE

Length:

- 2D: 512MB: up to 10 min and 13,200 frames (depending on B-image size and FPS); typical: about 3 min/4000 images (with curved array: 15cm depth, angle 81°, 22 FPS)
- M-Mode/ PW-/CW-Mode: 32MB: up to 1 min motion time (depending on sweep speed and depth)

Cine operation:

- Manual: image by image
- Auto run: speed, 25 to 200%; repeat, forward-forward, forward-backward-forward

Image/volume storage (archive)

Standard and fully anonymized archive available

Images stored as:

- Raw Data file (proprietary format)
- DICOM file (Single-or Multi-Frame)

Volume file stored as:

- Raw Data file (proprietary format)
- DICOM file
  Size: typically: 0.8 – 5MB (depending on probe and adjusted volume size)

Compression:

- 2D: JPEG, lossless, high, mid low
- 3D/4D: Lossy and lossless compression available; typical compression rates: 50% with lossless compression, 15% with lossy compression but maximum quality and 5% with lossy compression and reduced quality (approximate values)

Review of current Exam and archived data sets (Single Images and Cine Clips)

- View format: Raw data, DICOM data
- Display Formats: 1x1, 2x2, 3x3

Reload of current/ archived data sets:

- 2D Raw Data (incl. Color Doppler, Spectral Doppler and M-Mode)
- 3D Raw Data (Single Volume incl. Calc. Cines)
- 4D Raw Data (Volume Cine)

Export as:

- Still image: JPEG (.jpg), BITMAP (.bmp), TIFF (.tif), PNG (.png)
- Video format: AVI (.avi), MP4 (.mp4)
- Raw files: RAW (2D), VOL (Volume data), 4DV (RAW, VOL incl. Patient data – password protected)
- DICOM Files: DCM, DICOM Files with DICOMDIR
- 3D Raw Data: export Cartesian format possible
- Surface formats: STL, OBJ, PLY, 3MF, XYZ (with projected and full 3D export capabilities)

AVI Codec: MS Video 1, FullFrame

Image/volume storage (archive) (continued)

Export to:

- Network
- USB devices
- Email
- Printer
- DICOM
- Voluson Image Portal (VIP) [WLAN Adapter required]

Export Anonymous function (available for following image types: AVI, BMP, TIFF, JPEG, PNG, MP4, 4DV)

Backup function to:

- Network
- USB devices

Repro function:
Settings recall (e.g. Geometry, Gain, Color map, etc.) from a stored or reloaded picture

Exam history:

- Direct access to images from previous exams
- Direct access to measurement reports and images from previous exams
- Image compare window on screen to compare images from previous exams with current exam image

Hard Drive Data Storage space: approx. 450 GB

Connectivity

DICOM support:

- Verify
- Print
- Store
- Modality Worklist
- Structured Reporting
- Storage Commitment
- Query/Retrieve
- Media Exchange
- MPPS (Modality performed procedure step)
- Off network / mobile storage queue
- TLS

Scanning Parameters

B-Mode	
Gain range	+15 (100%) to -25 dB (0%)
TGC	8 sliders
Nearfield/Farfield	Adjusting upper/lower TGC sliders
Mode	Harmonic/Fundamental
Harmonic Frequencies	Low / Mid / High
Fundamental Frequencies	Penet / Norm / Resol
Acoustic Power	1-100%
Angle	3° - 189° in 5° increments (probe dependent)
Max Angle	Probe dependent
Shadow Reduction	On/ Off available on all probes except 9L-D, M5Sc-D and VScan Air CL
Augment	On/ Off, available on all probes except 9L-D, C1-5-D, M5Sc-D and VScan Air CL
Dynamic Contrast	23 steps: 1 – 12, 0.5 increments
SRI	5 steps (1-5), available on all probes
CRI	8 steps (1-8), available on all (curved and linear) probes except: M5Sc-D and Vscan Air CL
Gray maps	21 (18 basic maps and 3 User-defined maps)
Tint maps	11 (10 colors, 1 greyscale)
Line filter	off, low (12.5/75/12.5%), high (25/50/25%)

B-Mode (continued)	
Persistence filter	8 steps from 1 to 8
CRI filter	4 steps: off/ low/ mid/ high
Line Density	3 steps: low/ norm/ high
Reject	51 steps: 0 to 255
Enhance	6 steps 0, 1, 2, 3, 4, 5
Display Modes	B, XTD, Fullscreen
Max. B-Mode Frame Rate	> 3600 frames/sec
Gray scale values	8 bit
Frequency Range	1 to 13 MHz depending on the probe, adjustable in 3 fundamental steps (penetration, normal, resolution) and up to 4 Harmonic steps (Augment, low, mid, high)

Screen Formats:
- 2D Imaging: Single (B), Dual (B+B), Quad (B+B+B+B)
- XTD View: Single (XTD), Dual (B+XTD)

Write Zoom up to 8x Magnification

Read Zoom: 0.8x – 3.4x Zoom (with HD-Zoom functionality up to 22x Zoom)

Virtual Convex:

* also with CrossXBeam CRI

- 9L-D*
- 11L-D*
- M5Sc-D
- ML6-15-D*

Wide Sector:
- RAB6-D
- RIC5-9-D
- IC5-9-D
- C2-9-D
- C1-6-D
- C1-5-D

Shadow Reduction:
- RAB6-D
- RIC5-9-D
- IC5-9-D
- C2-9-D
- C1-6-D
- C1-5-D
- 11L-D
- ML6-15-D

Augment:
- RAB6-D
- RIC5-9-D
- IC5-9-D
- C2-9-D
- C1-6-D
- 11L-D
- ML6-15-D

Auto*live:*
- RAB6-D
- RIC5-9-D
- IC5-9-D
- C2-9-D
- C1-6-D
- ML6-15-D

M-Mode	
Working Modes	M (conventional M- Mode) AMM (Anatomical M-Mode)
Acoustic Power	1-100%
Gain	+15 (100%) to -25 dB (0%)
Harmonic Frequencies	Low / Mid / High
Fundamental Frequencies	Penet / Norm / Resol
Dynamic Contrast	23 steps: 1 – 12, 0.5 increments
Gray maps	21 (18 basic maps and 3 User-defined maps)
Tint maps	11 (10 colors, 1 greyscale)
Reject	51 steps: 0 to 255
Enhance	6 steps: 0, 1, 2, 3, 4, 5
Sweep speed	1 - 6
B/M-Mode Quality	On / Off
Review (memory times)	>60 s (32MB)
Format	40/60, 50/50, 60/40
AMM Rotate	-90 to 90

Display Modes:
- M: 2D+M, 2D+M/CFM, 2D+M/HD-Flow, 2D+M/Slow*flow*HD, 2D+M/TD
- AMM: 2D+AMM, 2D/CFM+AMM/CFM, 2D/HD-Flow +AMM/HD-Flow, 2D/Slow*flow*HD +AMM/Slow*flow*HD, 2D/TD+AMM/TD

M-Mode (continued)
Screen Formats: (window arrangement) • 2D+M and 2D+AMM: up/down (horizontal): three different sub formats 40/60, 50/50, 60/40% left/right (vertical): 50/50% • 2D+AMM+AMM: left/right-up/down: 50/25/25%
Not available on Vscan Air CL

M-Color Flow Mode	

Probes:
- RAB6-D
- C1-6-D
- C1-5-D
- C2-9-D
- RIC5-9-D
- IC5-9-D
- M5Sc-D

Acoustic MCFM Power	1-100%
MCFM Color Maps	8 maps
CFM Gain	+/-15 dB range, 0.1 dB steps
CFM Velocity Scale Range	PRF: 100 Hz to 20.5 kHz
Wall Motion Filter	8 – 3000 Hz
Ensemble (color shots per line)	8-16, step size 1
Smooth:	Rise: 12 steps Fall: 12 steps
CFM Baseline Shift	17 steps
CFM Threshold	1 – 255 steps
Balance	25 – 225, step size 5
Artifact suppression	On / Off
Radiant*flow*	Off / Min / Mid / Max

Pre-settable and independently adjustable B-, M and MCFM Gain

CFM Spectrum Inversion

Gentle color filter

Color Display Mode:
- V (Velocity)
- V-T (Velocity + Turbulence)
- V-P (Velocity + Power)
- T (Turbulence)
- P-T (Power + Turbulence)

Real –time Triplex Mode	B + M + MCFM in any depth

Color Doppler Mode (CFM)	
Screen Formats	2D+CFM: Single, Dual, Quad

Display Modes:
- Simultaneous dual mode: 2D/2D+CFM
- Triplex mode: 2D+CFM/PW, 2D/M+MCFM
- Volume Mode: 3D+CFM, STIC+CFM

Color coding: 65536 color steps

Color Display Mode:
- V (Velocity)
- V-T (Velocity + Turbulence)
- V-P (Velocity + Power)
- T (Turbulence)
- P-T (Power + Turbulence)

Gain	+15 dB to -15 dB, 0.2 dB steps
Acoustic output	1 – 100%
Pulse Repetition Frequency	CFM: 100 Hz to 20.5 kHz MCFM: 100 Hz to 20.5 kHz
Quality	low/ norm/ high
Radiant*flow*	Off / Min / Mid / Max
Flow Profiles	6 presets
Color box	Maximal to minimal B mode scan angle; axial: B-scan range
Baseline shift	17 steps (independent from spectral Doppler)
Inversion of color direction	Yes
Wall Motion Filter	8 steps (low1, low2, mid1, mid2, high1, high2, max, max2)
Smooth Filter	Rise: 12 steps Fall: 12 steps

Color Doppler Mode (CFM) (continued)	
Threshold	1 - 255
Line Density (color line density)	10 steps
Ensemble (color shots per line)	CFM: 7 to 31; MCFM: 8 to 16
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225
Center frequency	Low/ mid/ high
Line filter	Off, 1-7
Color Maps	8 different color codes for each probe
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Max. meas. velocity	4.23 m/sec
Min. meas. velocity	0.3 cm/sec
Scale	kHz, cm/s, m/s
Artifact suppression	Yes
Max. Color Doppler Frame Rate	> 990 frames/sec

Power Doppler Mode (PD)	
Screen Formats	2D+PD: Single, Dual, Quad
Display Modes: • Simultaneous dual mode: 2D/2D+PD • Triplex mode: 2D+PD/PW • Volume Mode: 3D+PD	
Acoustic output	1 – 100%
PD coding	256 color steps
PD box	Maximal to minimal B mode scan angle; axial: B-scan range
Display mode	P (Power)
Wall motion Filter	8 steps (low1, low2, mid1, mid2, high1, high2, max, max2)
Smooth Filter	Rising edge: 12 steps Falling edge: 12 steps
Gain Control	+15 dB to -15 dB, 0.2 dB steps
PD Ensemble	7 to 31
PD Line Density	10 steps
Pulse Repetition Frequency	100 Hz to 20.5 kHz
Color center frequency	low / mid / high
Radiant*flow*	Off / Min / Mid / Max
PD Map	8 different color codes for each probe
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225 in 41 steps
Artifact suppression	4 steps (off, low, mid, high)
Flow Profiles	6 presets
Not available on Vscan Air CL	

HD-Flow	
Screen Formats	2D+HDF: Single, Dual, Quad
Display Modes: • Simultaneous dual mode: 2D/2D+HDF • Triplex mode: 2D+HDF/PW; 2D/M+MHDF • Volume mode: 3D+HDF	
HD-Flow Coding Steps	256 color steps
Acoustic output	1 – 100%
HD-Flow window size (lateral)	Maximal to minimal B mode scan angle; axial: B-scan range

HD-Flow (continued)	
Wall Motion Filter	8 steps (low1, low2, mid1, mid2, high1, high2, max1, max2)
Smooth Filter	Rise: 12 steps Fall: 12 steps
Gain Control	+15 dB to -15 dB, 0.2 dB steps
HD-Flow Ensemble	7 to 31
HD-Flow Line Density	10 steps
Pulse Repetition Frequency	100 Hz to 20.5 kHz
HD-Flow Map	8 different color codes for each probe
Frequency Range	1 to 18 MHz depending on the probe adjustable in three steps (low, mid, high)
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225
Line Filter	8 steps (off, 1 to 7)
Artifact suppression	4 steps (off, low, mid, high)
Radiant*flow*	Off / Min / Mid / Max
Flow Profiles	6 presets
Inversion of color direction	Yes
Color center frequency	low / mid / high
Quality	low / norm / high
Not available on Vscan Air CL	

Radiant*flow*		
• RAB6-D	• C2-9-D	• 11L-D
• RIC5-9-D	• C1-6-D	• ML6-15-D
• IC5-9-D	• C1-5-D	• Vscan Air CL
• M5Sc-D	• 9L-D	

Slow*flow*HD	
Available on all probes, except M5Sc-D, C1-5-D and Vscan Air CL	
Screen Formats	Single, Dual, Quad, 2D+ Slow*flow*HD
Display Modes: • Simultaneous dual mode: 2D/2D+ Slow*flow*HD • Triplex mode: 2D+ Slow*flow*HD /PW (triplex update); 2D+ Slow*flow*HD /M, 2D+ Slow*flow*HD /AMM	
Slow*flow*HD Coding Steps	256 color steps
Slow*flow*HD window size lateral	Maximal to minimal B mode scan angle; axial: B-scan range
Wall Motion Filter	8 steps (low1, low2, mid1, mid2, high1, high2, max1, max2)
Smooth Filter	12 steps
Gain Control	+15 dB to -15 dB, 0.2 dB steps
Line Density	10 steps
Pulse Repetition Frequency	auto adjusting
Map	8 different color codes for each probe
Frequency Range	1 to 18 MHz depending on the probe adjustable in three steps (low, mid, high)
Flow Resolution	4 steps (low, mid1, mid2, high)
Balance	From 25 to 225
Line Filter	8 steps (off, 1 to 7)
Artifact suppression	4 steps (off, low, mid, high)

Tissue Doppler Mode (TD)

Available on all probes, except Linear probes & Vscan Air CL

Screen Formats	2D+TD: Single, Dual, Quad
Display Modes • Simultaneous dual mode: 2D/2D+TD • Triplex mode: 2D+TD/PW, 2D/M+MTD	
TD coding steps	65536 color steps
Depth range	Axial: 0 to B-scan range Lateral: 0 to B-scan-range
Baseline shift	17 steps
Inversion of color direction	Yes
Smooth Filter	Rise: 12 steps Fall: 12 steps
Gain Control	+15 dB to -15 dB, 0.2 dB steps
Line Density (color line density)	10 steps
Ensemble (Color shots per line)	3 to 31
Flow Resolution	4 steps (low, mid1, mid2, high)
Pulse Repetition Frequency	100 Hz to 20.5 kHz
TD Map	4 different color codes for each probe
Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Balance	From 25 to 225
Max. meas. velocity	4.23 m/sec
Min. meas. velocity	0.3 cm/sec
Display Mode	V (velocity)
Scale	kHz, cm/s, m/s

Spectral Doppler Mode (PW, CW)

Pulsed Wave Doppler Mode for all probes except Vscan Air CL
Continuous Wave Doppler Mode for 9L-D, C1-6-D, C2-9-D, M5Sc-D and RAB6-D

Gain Range	+15 to -25 dB (PW) +15 to -15 dB (CW)
Acoustic output	1 – 100%
Frequency	PW-Doppler: 1.75-18 MHz CW-Doppler: 1.75-16 MHz
Pulse Repetition Frequency	PW-Doppler: 0.9-22 kHz CW-Doppler: 1.3-41.7 kHz
Flow Profiles	6 presets
Sample Volume (Doppler Gate)	Length: 0.1, 0.7, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20 mm Position: 0.1 mm to B-scan end Angle: -85°…0°…+85°, 1° increments
Baseline shift	17 steps, -8 to 8
Inversion of flow direction	Yes
Wall Motion Filter	PW: 30…500 Hz, 8 steps CW: 30…1000 Hz, 8 steps
Gray maps	21 (18 basic maps and 3 User-defined maps)
Tint maps	10 colors, 1 greyscale
Center frequency	Low/mid/high
Sweep speed	Simplex/ Duplex/ Triplex: 26.44/13.22/8.81/6.61/4.40/ 2.94 cm/s
Review (memory times)	>60s (32MB)
Allow HPRF	On/off
Dynamic contrast	10 – 40 in2 step increments

Spectral Doppler Mode (PW, CW) (continued)

Frequency range	1 to 18 MHz depending on the probe, adjustable in 3 steps (low, mid, high)
Units	kHz, cm/s, m/s
RT Trace	Off / Auto / Lower / Upper
Audio Volume	Adjustable
Measurable flow velocities: • PW: 1cm/s – 8m/s (a=0°, 2.0MHz, max. Baseline shift) 1cm/s – 16m/s (a=60°, 2.0MHz, max. Baseline shift) • CW: 1cm/s – 11.6m/s (a=0°, 2.0MHz, max. Baseline shift) 1cm/s – 23.20m/s (a=60°, 2.0MHz, max. Baseline shift)	
Scale Display • Vertical: kHz, cm/s, m/s (selectable) • Horizontal: 1s marker (big), ½ s marker (small)	
Display Modes: • 2D/D (duplex update) • 2D+CFM/D, 2D+HD-Flow/D, 2D+PD/D (triplex update, CW or PW) • 2D+CFM/PW, 2D+PD/PW, 2D+HD-Flow/PW (triplex simultaneous, PW only)	
Screen Formats: (window arrangement) • up/down (horizontal): 40/60, 50/50, 60/40% • left/right (vertical): 50/50%	
Not available on Vscan Air CL	

PW-Tissue Doppler Mode (PW-TD)

Probes:
- RAB6-D
- C1-6-D
- C2-9-D
- RIC5-9-D
- M5Sc-D

Operating Modes	2D+TD/PW (Tissue Doppler + Pulsed Wave Doppler, Single Gate)
Transmit Frequencies	1.75-18 MHz
Pulse Repetition Frequency (PRF)	0.9-7.0 kHz
Sample Volume (Doppler Gate)	Length: 0.1, 0.7,1,2,3,4,5,6, 7,8,9,10,15,20 mm Position: 5 mm to B-scan end Angle correction: -85°…0°…+85°
Power control range	1-100
Gain range	B-Mode: +15 to -25 dB TD: +15 to -15 dB PW: +15 to -25 dB
WMF (Wall Motion Filter)	PW: 30…500 Hz,
Baseline shift	± PRF/2, ± 8 steps
Spectrum Analyzer	max. 128 frequencies, 256 amplitude levels
PW sweep speeds	Duplex/Triplex (26.44 / 13.22 / 8.81 / 6.61 / 4.40 / 2.94 cm/s)
Review (memory time)	>60 s (32MB)
Measurable velocities	1cm/s – 1.3m/s (a = 0°, 2.0MHz, max. zero shift) 1cm/s – 2.5m/s (a = 60°, 2.0MHz, max. zero shift)
Signal processing	Dynamic range: 15 steps (10 to 40) Gray maps: 18 basic curves and 3 User-defined (pre, post) Tint maps: 11
Scale display	Vert.: kHz, cm/s, m/s (selectable) Hor.: 1s marker (big), ½ s marker (small)

PW-Tissue Doppler Mode (PW-TD) (continued)

Screen Formats	2D+TD/PW: horizontal: three different sub formats 40/60, 50/50, 60/40% vertical: 50/50%
Display Modes	2D+TD/PW (duplex/triplex update/simultaneous);
Audio-Modes	Stereo (both directions separately in both channels)
Audio Volume	Adjustable

Not available on Vscan Air CL

Volume scan module

Probes: RAB6-D, RIC5-9-D

Vol. scan size: max. 128 MB for B-Mode volumes, max. 180 MB for Color Doppler volumes; The required memory space depends on scan parameters (VOL-box size and quality (low, mid1, mid2, high1, high2, max). Typical: 0.8-5 MB

Lines/2D-image: max. 1024 (typ. 80 to 350)

2D-images/volume: Up to 4096 (Acquisition mode dependent)

Max. Volumes/sec.: 812 (typ. 7-12), depending on probe and scanning parameters

4D Volume Cine: up to 400 volumes, up to 1024 MB

Display of sectional plane images: synchronous with control seeing, arbitrary movement in volume, monitored position in volume

Rotation: 360°, 1° or 3° increments (X-, Y- and Z-axis)

Magnification. Adjustable from 0.3 to a factor of 4.00

Acquisition Modes:

- 3D Static:
  - 3D (2D incl. CRI)
  - 3D/PD (incl. CRI)
  - 3D/CFM (incl. CRI)
  - 3D/HD-Flow (incl. CRI)
  - 3D B-Flow
  - 3D Contrast (Coded PI)
- 4D:
  - 4D Real Time
  - VCI-A
  - VCI-OmniView
  - STIC

STIC:

- Fetal Cardio
- STIC Angio: B/Power Doppler (incl. CRI)
- STIC CFM: B/Color Doppler (incl. CRI)
- STIC HD-Flow: B/HD-Flow (incl. CRI)
- STIC B-Flow
- STIC TD

Visualization Modes:

- Render
  - 3D/4D Rendering (diverse surface and intensity projection modes)
  - SonoRender*live*
- Sectional Planes
  - Multiplanar
  - OmniView, actual and projected view
  - Niche
  - SonoVCAD*labor* (part of Labor & Delivery Package)
- TUI (Tomographic Ultrasound Imaging) (overview image+parallel slices)
  - TUI Standard

SonoVCAD*heart*

Volume Analysis

- VOCAL II: semi-auto/ manual segmentation tool using touch screen, 3D Static only + Threshold Volume
- SonoAVC*follicle* (Sono Automated Volume Count)
- SonoAVC*antral*[2.0]
- SonoAVC*general*
- SonoCNS
- Uterine Trace
- Spine Trace
- SonoPelvicFloor[2.0]

Volume scan module (continued)

- Fibroid Mapping

VCI (Volume Contrast Imaging)

Render Modes:

- HD*live*
- Surface Enhanced
- Color
- Mix Mode of two render modes
- Surface Texture
- Surface Smooth
- HD*live* Silhouette
- Transparency modes: max- min- and X-ray
- Gradient Light
- Inversion
- Glass Body
- Light

Display graphics:

- Rotation axis, center point
- ROI box, 3D Frame
- Temporary display of onscreen controls (rotation, translation)

Gray maps:

- Multiplanar: 21 (18 basic curves and 3 User-defined (pre, post)
- 3D Image: brightness (-50 to +50) & contrast (-50 to +50))

Tint maps:

- Multiplanar: 10
- 3D image: 10

Depth render maps: 3

BF (B-Flow)

B-Flow for all probes except: M5Sc-D, Vscan Air CL

Screen Formats	Single (BF), Dual (BF+BF), Quad (BF+BF+BF+BF)
Display Modes	BF, Update: BF/PW
Acc. Power range	1 – 100%
Scan angle	Taken from 2D
Gain range	+15 (100%) to -25 dB (0%)
Gray scale values	8 bit
SRI	Taken from 2D
Persistence filter	8 steps (pre)
S./PRI	1.00, 1.25, 1.50, 1.75, 2.00, 3.00, 4.00, 5.00..15
Line Density	3 steps: low, norm, high
Enhance	6 steps (pre) 0, 1, 2, 3, 4, 5
Gray maps	21 (18 basic maps and 3 User-defined maps)
Tint maps	10
Dynamic Contrast	23 Steps: 1-12, 0.5 increments
Accumulation	Off, 0.05, 0.10, 0.20, 0.40, 0.60, 0.80, infinite
Background	0, 1, 2

Compression Elastography

Probes:

- RIC5-9D
- 11L-D
- IC5-9-D
- ML6-15D

Acoustic Power range	1 – 100%
Tx Frequency	3 (Penet / Norm / Resol)
Transparency	51 steps (0,5, 10, …255)
Soft Compress	Range: 0 – 9, Step size: 1
Hard Compress	Range: 0 – 9, Step size: 1
PRF	10, 15, 25, 40, 60, 85 Hz
Elasto Maps	8
Persistence	Range: 1 – 9, Step size: 1
Line Density	Range: 1-2
Filter Axial	Range: 1 – 9, Step size: 1
Filter Lateral	Range: 1 – 21, Step size: 1
Window Length	Range: 8 – 25, Step size: 1
Frame Reject	Range: 0 – 255, Step size: 5

Compression Elastography (continued)	
Pixel Reject	Range: 0 – 255, Step size: 5
Quality Curve	On / Off
Screen Formats: • Single (2D/Elasto) • Dual (2D/Elasto+2D/Elasto) • Quad (2D/Elasto+2D/Elasto+2D/Elasto+2D/Elasto)	
Elastography Analysis up to 4 user adjustable ROIs with comparative analysis on complex curves	
Elastography Ratio Measurement	

Shear Wave Elastography††††	
Probes:	• C1-6-D
Acoustic Power range	1 – 100
Gain	0 - 100
Frequency	50 – 400 Hz
Transparency	51 steps (0,5, 10, …255)
Elasto Maps	8
Velocity Scale	2,0 – 10,0 m/s (22 steps)

Contrast Imaging††††		
Probes		
• 9L-D	• C1-5-D	• RIC5-9-D
• ML6-15	• C1-6-D	• IC5-9-D
Low MI Contrast Capabilities		
Gain	+15 (100%) to -25 dB (0%)	
Acoustic output	1-100%	
Scan angle	Taken from 2D	
Gray scale values	8 bit	
Tint maps 10	10	
Gray maps 18	21 (18 basic maps and 3 user-defined maps)	
CCIS map 8	8 (5 basic maps and 3 user-defined maps)	
SRI	Taken from 2D	
S./PRI	1.00, 1.50, 2.00, 3.00, 4.00,…15.00	
Accumulation	Off, 0.20, 0.35, 0.50, 0.75, 1.00, 1.50, Infinite	
Dynamic Contrast	23 Steps: 1-12, 0.5 increments	
Line Density	3 steps (pre) low, norm, high	
Enhance	6 steps (pre) 0, 1, 2, 3, 4, 5	
Persistence filter	8 steps (pre)	
Time Delay	0, 0.5, 1, 2, 3, …10	
Contrast Clock	On / Off	
Balance	Range: 25 – 225, Step size: 5	
Threshold	Range: 10 – 255, Step size: 1	
Display Modes:		
• Coded PI	• Coded PI: CIS	• Coded PI: CCIS
Screen Formats:		
• Code PI: Single (B), Dual (B+B), Quad (B+B+B+B)	• CIS: Dual simultan (2D+Coded PI)	• CCIS: Single (B), Dual (B+B), Quad (B+B+B+B)

Measurements

Generic measurements	
Distance:	
• Distance (Point to Point)	• 2D Trace (Point Length)
• Distance (Line to Line)	• Stenosis (% Dist.)
• 2D Trace (Trace Length)	• Ratio D1/D2
Area/Circumference:	
• Ellipse	• Stenosis (%Area)
• Trace (Line)	• Area (2 Dist.)
• Trace (Point)	• Ratio A1/A2
Volume (following Methods):	
• 1 Distance	• 3 Distance
• 1 Ellipse	• Multiplane-Planimetric Volume (3D only)
• 1 Dist. + Ellipse	
Angle:	
• Angle (3 Point)	• Angle (2 Line)
M-Mode:	
• Distance (Point to Point)	• HR
• Time	• Stenosis (% Dist.)
• Slope	• IMT
• Vessel Diam.	• Stenosis Diam.
• Ratio D1/D2	
PW Doppler Mode:	
• Auto & Manual Trace:	• PGmax, PGmean
• PS (Peak Systole)	• TAmax (Time avg. max. Vel.)
• ED (End Diastole)	• TAmean (Time avg. mean Vel.)
• MD (Mid. Diastole)	• VTI (Vel. Time Integral)
• S/D (Ratio)	• Heart Rate
• TAmax	• Vol. Flow
• HR	
• PI (Pulsatility Index)	
• RI (Resistance Index)	
Vessel:	
• R/L Vessel area	• R/L Stenosis area
• R/L Vessel diam.	• R/L Stenosis diam.
• R/L IMT	• R/L Flow diam.
Single Measurements:	
• Velocity	• RI
• Time	• PI
• PS	• Acceleration
• PS/ED	• HR
• ED	

Abdomen calculations	
Liver	Gallbladder
Pancreas	Spleen
Kidney (right/left)	Renal Artery (right/left)
Aorta (Proximal, Mid, Distal)	Portal Vein
Vessel	Bladder Volume
Summary Reports	

Small part calculations
Thyroid (right/left)
Testicle (right/left)
Dorsal Penile Artery (right/left)
Vessel
Summary Reports

Small part breast calculations
Lesion 1-5 (right/left)
Summary Reports

Obstetrics calculations
Fetal Biometry
Early Gestation
Fetal Long Bones
Fetal Cranium
NT Method: SonoNT/Manual
AFI
Thorax
Uterus
Ovary right/left
Umbilical Vein
Placenta Volume
Ductus venosus: S, D, a, PI, PLI, PVIV
Doppler measurements: Ductus Art., Ductus Ven., Ao, Carotid, MCA, Celiac Artery, Superior Mesenteric Artery, Umbilical Art., Umbilical Vein, FHR, Uterine Art, Tricuspid valve, Ovarian
Gestational Age Calculation
Gestational Growth Calculation
Fractional Limb Volume
Fetal Weight (FW) Estimation
Fetal Trend Graphs
Multi-Gestational Calculation & Fetal Compare
Calculation and Ratios
Fetal Qualitative Description (Anatomical assessment)
Fetal Environmental Description (Biophysical profile)
Summary Reports

Obstetrics fetal echo	
Chambers	LPA
Thorax	RPA
Aorta/LVOT	Ductus Art.
Pulmonary/RVOT	Cardiac Output
Venous	LT TEI
FHR	RT TEI
Tricuspid valve	Ductus Ven.
Mitral Valve	Umbilical Vein
Aortic	Pulmonary Veins
Pulmonary	Summary Reports

Obstetrics: SonoL&D	
Progression Angle – Auto	Progression Angle – Manual
Head Perineum Distance	Midline Angle
Head Direction	Summary Reports

Obstetrics Z-scores	
Long Axis	Obl. Short axis
Aortic Arch	4 Chambers
Short Axis	Thorax
Summary Reports	

Cardiology calculations

2D Mode:
- Simpson (LV, LA, RA)
- Volume (Area Length)
- LV-Mass (Epi & Endo Area, LV Length)
- LV (RVD, IVS, LVD, LVPW)
- LVOT Diameter
- RVOT Diameter
- MV (Dist A, Dist B, Area)
- TV (Diameter)

Cardiology calculations (continued)

- AV/LA (Aortic Valve/Left Atrium)
- PV (Diameter)

PEd (Pericardial Effusion Diameter)

M-Mode:
- LV (IVS, LVD, LVPW, RVD)
- AV/LA (Ao Root Diam, LA Diam, AV Cusp Sep., Ao Root Ampl)
- MV(D-E, E-F Slope, A-C Interval, EPSS)
- HR (Heart Rate) Atrial HR
- TV (TAPSE)

PW-Mode:
- MV (Mitral Valve)
- AV (Aortic Valve), TV (Tricuspid Valve)
- PV (Pulmonary Valve)
- LVOT & RVOT Doppler (Left & Right Ventricle Outflow Tract)
- Pulmonic Veins
- PAP (Pulmonary Artery Pressure measurement)
- RAP (Right Atrial Pressure)
- HR (Heart Rate)
- TEI-Index

CW-Mode:
- PISA

Others:
- Diast. Vol (Bi)
- Syst. Vol. (Bi)
- Stroke Volume
- Volume Flow
- Cardiac Output
- Ejection Fraction
- Fractional Shortening
- Myocardial Thickness
- LA/Ao Ratio
- E/A Peak
- Peak Gradient Acceleration
- SVR/SVRI
- Mean Gradient
- Mean Gradient Acceleration
- VTI
- TVA
- PG
- PHT
- MVA
- AVA
- ERO
- CVP (Cardio Vascular Profile) Score

Summary Reports

Transrectal calculations
Prostate
Vessel
Summary Reports incl. PSAD, PPSA(1), PPSA(2) calculation

Vascular calculations: Carotid
Left/Right CCA (Common Carotid Artery)
Left/Right ICA (Internal Carotid Artery)
Left/Right ECA (External Carotid Artery)
Left/Right Vertebral Artery
Left/Right Subclav.
Left/Right Bulb
Vessels
Summary Reports

Vascular calculations: UEA	
Innom. Artery	Ulnar. Artery
Subclav. Artery	SupPalm. Artery
Axill. Artery	DeepPalm. Artery
Brach. Artery	Graft
Rad. Artery	
Summary Reports	

Vascular calculations: UEV	
Innom. Vein	Basilic Vein
Subclav. Vein	Brach. Vein
Jugular. Vein	Med. Cub. Vein
Axill. Vein	Rad. Vein
Ceph. Vein	Ulnar Vein
Summary Reports	

Vascular calculations: Renal Artery	
Renal Artery	Interlob. Artery
Renal Vein	Arcuate Artery
Segm. Artery	
Summary Reports	

Vascular calculations: LEA	
Com. Iliac Artery	Popl. Artery
Ext. Iliac Artery	Ant. Tib. Artery
Int. Iliac Artery	Post. Tib. Artery
Com. Fem. Artery	Peron. Artery
Prof. Fem. Artery	Dors. Ped. Artery
Sup. Fem. Artery	Graft
Summary Reports	

Vascular calculations: LEV	
IVC	Com. Fem. Vein
Com. Iliac Vein	Sup. Fem. Vein
Ext. Iliac Vein	Prof. Fem. Vein
Int. Iliac Vein	Low Saph. Vein
Gr. Saph. Vein	Ant. Tib. Vein
Popl. Vein	Post. Tib. Vein
Summary Reports	

Vascular calculations: TCD	
MCA	P com. Artey
ACA	Vertebral
PCA	Basilar
A com. Artey	
Summary Reports	

Gynecology calculations
Uterus
Left/Right Ovary
Left/Right Follicle: Manual/ Auto Caliper
Fibroid/Myoma
Endometrial thickness (Dist, Double Dist.)
Cervix Length
Left/Right Ovarian Artery
Left/Right Uterine Artery
Vessels
Pelvic Floor
Left/Right Ovarian Cyst
Left/Right Ovarian Mass
Left/Right Adnexal Cyst
Generic Cyst
Left/Right Adnexal Mass
Generic Mass
Bladder (Length/Width/Height/Vol)
GYN IOTA LR2, Simple Rules and ADNEX Model††††
IETA unenhanced ultrasound examination and enhanced ultrasound examination – Sonohysterography††††
IDEA Protocol
Uterus classification (ESHRE/ESGE and ASRM)
Summary Reports

Pediatric calculations
Left/Right Hip Joint
Left/Right Femoral Head Coverage
Pericallosal Artery
Summary Report

Cephalic calculations
Left/Right ACA (Anterior Cerebral Artery)
Left/Right MCA (Middle Cerebral Artery)
Left/Right PCA (Posterior Cerebral Artery)
Basilar Artery
A-Com. A (Anterior Com. Artery)
P-Com. A (Posterior Com. Artery)
Left/Right CCA (Common Carotid Artery)
Left/Right ICA (Internal Carotid Artery)
Left/Right Vertebral Artery
Vessels
Summary Reports

OB Tables

Age tables

- AC: ASUM, CFEF, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Intergrowth, Jeanty, JSUM, Kurmanavicius, Merz, Nicolaides, Shinozuka, Siriraj, Tokyo, WHO
- AD: Persson
- APAD: Merz
- APTD: Hansmann
- APTDxTTD: Shinozuka, Tokyo
- BOD: Jeanty
- BPD: ASUM, ASUM (old), Campbell, CFEF, Chitty (outer-outer) (outer-inner), Eik-Nes, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Intergrowth, Jeanty, Johnsen, JSUM, Kurmanavicius, Kurtz, Leung, McLennan, Merz, Nicolaides, OSAKA, Persson, Rempen, Sabbagha, Shinozuka, Siriraj, Tokyo, UltraARG, Verburg, WHO
- CEREB: Chitty, Goldstein, HILL, Hobbins, Nicolaides, Verburg
- CLAV: YARKONI
- CRL: ASUM, DAYA, Eik-Nes, Hadlock, Hansmann, Intergrowth, JSUM, McLennan, Persson, Pexters, Nelson, OSAKA, Rempen, Robinson, Robinson_BMUS, Sahota, Shinozuka, Tokyo, Verburg
- FL: ASUM, CFEF, Chitty, Eik-Nes, Hadlock_82, Hadlock_84, Hansmann, Hobbins, Hohler, Intergrowth, Jeanty, Johnsen, JSUM, Kurmanavicius, Leung, Persson, Merz, Nicolaides, O'Brien, OSAKA, Shinozuka, Siriraj, Tokyo, UltraARG, WARDA, WHO
- FTA: OSAKA
- FIB: Jeanty
- GS: Hansmann, Hellman, Holländer, Nyberg, Rempen, Tokyo
- HC: ASUM, CFEF, Chitty, Hadlock_82, Hadlock_84, Hansmann, Intergrowth, Jeanty, Kurmanavicius, Leung, Merz, Nicolaides, Siriraj, Johnsen, WHO
- HL: ASUM, Hobbins, Jeanty, Merz, OSAKA
- LV: Tokyo
- MAD: Eik-Nes, eSnurra, Kurmanavicius
- OFD: ASUM, Chitty, Hansmann, Jeanty, Kurmanavicius, Merz, Nicolaides
- RAD: Jeanty, Merz
- TCD: Chavez
- TIB: Jeanty Merz
- TAD: CFEF, Merz
- TTD: Hansmann
- ULNA: Jeanty, Merz

Growth tables

- AC: ASUM, CFEF, Chitty, Hadlock, Hadlock82, Hansmann, Jacot-Guillarmod, Jeanty, Johnsen, JSUM, Kurmanavicius, Lai_Yeo, Lessoway, Leung, Merz, Nicolaides, Paladini, Shinozuka, Siriraj, Stork, Tokyo, Verburg, Medvedev, Intergrowth, WHO
- AD: Persson
- AFI: Moore
- Aorta: Vmax: Rizzo
- AoIst ED, PI, RI, PS, TAmax: DelRio2006
- APAD: Merz
- APTD: Hansmann
- APTDxTTD: Shinozuka_SD
- AxT: Shinozuka, Tokyo
- BOD: Jeanty
- BPD: ASUM, Campbell, CFEF, Chitty, Eik-Nes, Hadlock, Hadlock82, Hansmann, Jacot-Guillarmod, Jeanty, JSUM, Kurmanavicius, Lai_Yeo, Lessoway, Leung, McLennan, Merz, Nicolaides, Paladini, Persson, OSAKA, Sabbagha, Shinozuka, Siriraj, Stork, Tokyo, Verburg, Medvedev, Intergrowth, WHO
- CLAV: YARKONI
- CM: Nicolaides
- CRL: ASUM, Hadlock, Hansmann, Intergrowth, JSUM, McLennan, Persson, OSAKA, Robinson, Robinson 1993, Shinozuka, Tokyo, Pexters, Medvevev
- DV a/S: JSUM
- DV PI: Baschat, JSUM
- DV PLI: Baschat
- DV PVIV: Baschat
- DV S/a: Baschat
- FL: ASUM, CFEF, Chitty, Eik-Nes, Hadlock, Hadlock82, Hansmann, Jacot-Guillarmod, Jeanty, Johnsen, JSUM, Kurmanavicius, Lai_Yeo, Lessoway, Leung, Merz, Nicolaides, O'Brien, OSAKA, Paladini, Persson, Shinozuka, Siriaj, Stork, Tokyo, Verburg, WARDA, Medvedev, Intergrowth, WHO
- FTA: OSAKA
- FIB: Chitty, Jeanty, JFFSD, Siriraj
- FWg: Alexander
- Foot: Chitty
- GS: Hellman, Nyberg, Rempen, Tokyo
- HC: ASUM, CFEF, Chervernak, Chitty, Hadlock, Hadlock82, Hansmann, Jacot-Guillarmod, Jeanty, Johnsen, Kurmanavicius, Lai_Yeo, Lessoway, Leung, Merz, Nicolaides, Paladini, Siriraj, Stork, Verburg, Medvedev, Intergrowth, WHO
- HL: ASUM, Chitty, Jeanty, Lai_Yeo, Merz, JFFSD, OSAKA, Paladini, Siriraj, Medvedev
- IFA: Rotten
- IVC PLI: JSUM
- Kidney L/W/H: Chitty(2003), Vuurren
- Kidney Vol: Chitty(2003)
- Kidney RPAP: Chitty(2003), Vuuren, Romero, Hansmann
- Lt.Tei(ICT,IRT), Lt.Tei(a,b): Bhorat
- Lung Area Left/Right: Peralta
- LV: Tokyo
- MAD: Eik-Nes, eSnurra, Kurmanavicius
- MainPA Vmax: Rizzo
- MCA CP: Ebbing
- MCA PI: Bahlmann, Ebbing, JSUM
- MCA RI: JSUM, Bahlmann
- MCA PV: Mari
- MCA PS, TAmax: Schaffer
- MNM Ang: deJong-Pleij
- MV E/A: HARADA
- NBL: BUNDUKI, SONEK, Medvedev, Orlandi
- NT: Nicolaides
- OFD: ASUM, Chitty, Hansmann, Jeanty, Kurmanavicius, Merz, Nicolaides, Medvedev, Intergrowth
- MainPA Vmax: Rizzo
- RAD: Chitty, Jeanty, JFFSD, Merz, Paladini, Sirirja

Growth tables (continued)

- SAG. AP: Malinger
- SAG. CC: Malinger
- Stomach APD: Goldstein
- Stomach LD: Goldstein
- Stomach TD: Goldstein
- TAD: CFEF, Jacot-Guillarmod, Merz
- TC: Chitkara
- TCD: Chavez, Goldstein, Hill, Jacot-Guillarmod, Nicolaides, Verburg
- Thym. Dia: Pittyanont
- Thyr. Circ: Ranzini
- ThyTh: Karl
- TIB: Chitty, Jeanty, JFFSD, Merz, Siriraj
- TTD: Hansmann
- TV E/A: HARADA
- ULNA. Chitty, Jeanty, JFFSD, Merz, Paladini, Siriraj
- UmbArt PI: Ebbing, JSUM, Merz, Schaffer, Drukker
- UmbArt RI: JSUM, Merz, Kurmanavicius, Schaffer, Drukker
- UmbArt S/D: Drukker
- UtArtPI: Gomez, Merz, Schaffer
- UtArtRI: Merz, Schaffer
- Vermis A: Malinger
- Vermis C: Malinger

Fractional Limb Avol/Tvol: Lee

Fetal weight estimation (EFW)

- Campbell (AC)
- Hadlock (AC, BPD)
- Hadlock 1 (AC, FL)
- Hadlock 2 (BPD, AC, FL)
- Hadlock 3 (HC, AC, FL)
- Hadlock 4 (BPD, HC, AC, FL)
- Hansmann (BPD, TTD)
- Intergrowth (AC, HC)
- Lee (AVOL; AC, AVOL; AC, BDP, AVOL; TVOL; AC, TVOL; AC, BDP, TVOL)
- Merz (AC, BPD)
- Osaka (BPD, FTA, FL)
- Persson 1 (BPD, MAD, FL)
- Persson 2 (BPD, MAD)
- Schild (HC, AC, FL)
- Shepard (AC, BPD)
- Shinozuka 1 (BPD, ADTP, TTD, FL)
- Shinozuka 2 (BPD, FL, AC)
- Shinozuka 3 (BPD, APTD, TTD, LV)
- Tokyo (BPD, APTD, TTD, FL)

Gestational Age by EFW

- Hadlock, JSUM 2001, Osaka, Shinozuka, Tokyo, WHO (-/m/f), Intergrowth, CFEF

Fetal Weight Growth FWG

- Alexander, Ananth Tw (M,D), Bourgogne, Brenner, Burgundy (m/f), CFEF, Doubilet, Duryea (M/f), Ego (-/m/f), Eik-Nes, Hadlock, Hansmann, Hansmann (86), Hobbins/Persutte, Intergrowth, Johnsen (-/m/f), JSUM (2001), Kramer (m/f), Persson (96, 98), Osaka, Shinozuka, Tokyo, Williams, WHO (-/m/f), Yarkoni

Fetal ratios

CC/TC

CI (BPD/OFD) (Hadlock)

FL/AC (Hadlock)

FL/BPD (Hohler)

FL/HC (Hadlock), (WHO)

HC/AC (Campbell)

Va/Hem (Nicolaides), (Hansmann)

Vp/Hem (Nicolaides)

LHR (Peralta)

Fetal ratios (continued)
LTR (Lung Area/ Thorax Area) (Hasegawa)
CVR (Peranteau)
TT (Karl)
AOI/DUCTART (DelRio)
MD/MX (Rotten)
Lt./Rt. Opht. Art

Probes

C1-6-D	
XDclear Wideband Convex Probe	
Applications	Abdomen, OB, GYN
Max. Bandwidth (-20dB) †††	2-5 MHz
Number of Elements	192
Convex Radius	55 mm
FOV	113°
Foot Print	70.2 x 15.6 mm
Depth	Max. 50 cm
Center Frequency	3.4 MHz
B-Mode Frequency	2.00 MHz
Doppler Frequency	2.50 – 3.85 MHz
Harmonic Frequency	2.00 – 2.56 MHz

C1-5-D	
Wideband Convex Probe	
Applications	Abdomen, OB, GYN
Max. Bandwidth (-20dB) †††	2-5 MHz
Number of Elements	192
Convex Radius	56.1 mm
FOV	114°
Foot Print	69.3 x 17.2 mm
Depth	Max. 42 cm
Center Frequency	3.4 MHz
B-Mode Frequency	2.78 – 3.70 MHz
Doppler Frequency	2.00 – 3.23 MHz
Harmonic Frequency	2.00 – 2.13 MHz

C2-9-D	
XDclear Wideband Convex Probe	
Applications	Abdomen, OB, GYN, Pediatrics
Max. Bandwidth (-20dB) †††	3-9 MHz
Number of Elements	192
Convex Radius	43 mm
FOV	94°
Foot Print	51.0 x 14.0 mm
Depth	Max. 28 cm
Center Frequency	5.0 MHz
B-Mode Frequency	4.00 – 7.14 MHz
Doppler Frequency	3.03 – 5.00 MHz
Harmonic Frequency	2.63 – 3.57 MHz

IC5-9-D	
Wideband Microconvex Probe	
Applications	OB, GYN, Transrectal
Max. Bandwidth (-20dB) †††	4-9 MHz
Number of Elements	192
Convex Radius	10.1 mm
FOV	189°
Foot Print	21.2 x 17.2 mm
Depth	Max. 18 cm
Center Frequency	5.8 MHz
B-Mode Frequency	5.00 – 9.09 MHz
Doppler Frequency	4.00 – 5.26 MHz
Harmonic Frequency	3.45 – 3.85 MHz

11L-D	
Wideband Linear Probe	
Applications	Small Parts, Pediatrics, MSK, Vascular, Breast
Max. Bandwidth (-20dB) †††	4-10 MHz
Number of Elements	192
FOV	38.4 mm
Foot Print	47.1 x 12.7 mm
Depth	Max. 11 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	7.3 MHz
B-Mode Frequency	6.67 – 10.00 MHz
Doppler Frequency	5.26 – 7.14 MHz
Harmonic Frequency	4.55 – 5.00 MHz

9L-D	
Wideband Linear Probe	
Applications	Small Parts, Pediatrics, MSK, Vascular, OB
Max. Bandwidth (-20dB) †††	3-8 MHz
Number of Elements	192
FOV	44.2 mm
Foot Print	53.0 x 14.1 mm
Depth	Max. 14 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	5.5 MHz
B-Mode Frequency	4.55 – 10.00 MHz
Doppler Frequency	3.70 – 5.26 MHz
Harmonic Frequency	2.86 MHz

ML6-15-D	
Wideband Matrix Linear Probe	
Applications	Small Parts, Vascular, Pediatrics, MSK, Breast
Max. Bandwidth (-20dB) †††	4-13 MHz
Number of Elements	1008
FOV	50.4 mm
Foot Print	60.7 x 16 mm
Depth	Max. 16 cm
B-Mode Steering Angle	7°/14°/20°
Color Doppler Steering Angle	7°/14°/20°
Center Frequency	9.0 MHz
B-Mode Frequency	8.33 – 11.11 MHz
Doppler Frequency	6.25 – 9.09 MHz
Harmonic Frequency	5.00 – 6.25 MHz

RAB6-D	
Wideband Convex Volume Probe	
Applications	Abdomen, OB, GYN, Pediatrics
Max. Bandwidth (-20dB) †††	2-8 MHz
Number of Elements	192
Convex Radius	46.8 mm
Volume Sweep Radius	24.1 mm
FOV	90° (B), 90° x 85° (Volume scan)
Foot Print	62.2 x 34.0 mm
Depth	Max. 26 cm
Center Frequency	4.4 MHz
B-Mode Frequency	3.23 – 6.67 MHz
Doppler Frequency	3.03 – 5.00 MHz
Harmonic Frequency	2.63 – 3.33 MHz

RIC5-9-D	
Wideband Microconvex Volume Probe	
Applications	OB, GYN, Transrectal
Max. Bandwidth (-20dB) †††	4-9 MHz
Number of Elements	192
Convex Radius	10.1 mm
Volume Sweep Radius	11.6 mm
FOV	189°(B), 189° x 120° (Volume scan)
Foot Print	22.4 x 22.6 mm
Depth	Max. 18 cm
Center Frequency	6.6 MHz
B-Mode Frequency	5.00 – 9.09 MHz
Doppler Frequency	4.00 – 5.00 MHz
Harmonic Frequency	3.45 – 3.85 MHz

M5Sc-D	
XDclear Wideband Phased Array Probe	
Applications	Cardiology, Pediatrics, Cephalic
Max. Bandwidth (-20dB) †††	1-4 MHz
Number of Elements	240
FOV	90°
Foot Print	27.5 x 18.1 mm
Depth	Max. 24 cm
Center Frequency	2.9 MHz
B-Mode Frequency	2.44 – 3.33 MHz
Doppler Frequency	1.85 – 2.50 MHz
Harmonic Frequency	1.61 – 2.17 MHz

Vscan Air CL		
Wideband Linear & Curved Array Probe		
Applications	Abdomen, Vascular, Cardiology, Obstetrics & Gynecology, Pediatrics incl. Neonatal Cephalic, Musculoskeletal incl. Nerve, Small Parts, Interventional	
Weight	205 +/-3g	
	Curved	Linear
Max. Bandwidth (-20dB) †††	2-5 MHz	3-12 MHz
Number of Elements	128	192
FOV	60°	38.4 mm
Foot Print	64.0 x 16.0 mm	40.0 x 7.0 mm
Depth	Max. 24 cm	Max. 8 cm
Center Frequency	3.3 MHz	7.7 MHz

Biopsy guides available for :

Probes:

- 11L-D
- 9L-D
- ML6-15-D
- M5Sc-D
- C2-9-D
- C1-6-D
- C1-5-D
- IC5-9-D
- RIC5-9-D
- RAB6-D

Connectivity & Service Tools

External connectors
Ethernet Network (RJ45 -1.0Gbps/100Mbps/10Mbps) with connector protection
Wireless Network interface (USB, Option)
Bluetooth dongle (USB, Option for Vscan Air)
USB 3.0 (4x) Type A
USB 3.0 (2x) Type C
S-Video port
VGA port
HDMI, standard
DP out
Composite BNC
External Audio Out
Wireless display module (Option)
AC power input

Service tools
Data Export capabilities for Asset Performance Analytics
Probe Check: On-board probe quality assessment determining probe performance based on electroacoustic or impedance measurements in accordance with FDA 510(k) requirements.
InSite™ Remote diagnostic support
Verisound Fleet (AVURI, cloud-based preset management)
eDelivery of software updates

Safety Conformance

Applicable standards
• Classified to ANSI/AAMI ES60601-1 Medical Electrical Equipment, Part 1: General Requirements for Safety by a Nationally Recognized Test Lab
• Certified to CSA CAN/CSA-C22.2 NO. 60601-1 General requirements for safety
• ISO 17664-2: Processing of health care products
• CE Marked to Regulation (EU) 2017/745 on Medical Devices Conforms to the following standards for safety:
• IEC†† /EN 60601-1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
• IEC†† /EN 60601-1-2 Medial electrical equipment – Part 1-2: General requirements for safety – Collateral Standard: Electromagnetic compatibility – requirements and tests
• IEC†† /EN 60601-1-6 Medical electrical equipment Part 1 -6: General requirements for basic safety and essential performance – Collateral Standard: Usability
• IEC†† /EN 60601-1-9 Medical electrical equipment Part 1 -9: General requirements for basic safety and essential performance – Collateral Standard: Requirements for environmentally conscious design
• IEC†† /EN 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment
• IEC†† /EN 62366-1 Application of usability engineering to medical devices
• IEC/EN 62304 Software Life Cycle Processes
• IEC/EN 62359 Ultrasonic - Field characterization - Test methods for the determination of thermal and mechanical indices related to medical diagnostic ultrasonic fields
• EN ISO 15223-1: Symbols to be used with medical device labels, labelling and information to be supplied
• ISO 10993-1 Biological evaluation of medical devices – Part 1 Evaluation and testing

†Not for sale in the USA. Not approved or cleared by the U.S. FDA.
Please contact your GE Sales Representative for information about availability in your area.
†† Including national deviations
††† Used frequencies are dependent on probe settings and parameters and are displayed on the ultrasound screen
†††† Not available in all countries

* SonoLyst incorporates the AI technology of Intelligent Ultrasound

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