

Voluson *i* BT14

A leader in compact ultrasound 4D

Product description

The Voluson[®] *i* compact ultrasound system combines performance and reliability with innovative volume ultrasound technology to provide high-end ultrasound imaging in a convenient laptop design.

The Voluson *i* offers excellent image quality for a wide variety of applications incorporating advanced features.

Highlights

- Lightweight and portable
- Battery operation
- Real-Time 4D
- 3D Multiplanar Display
- 3D Power Doppler
- Automatic Optimization (AO)
- SRI (Speckle Reduction Imaging)
- CrossXBeam[®]
- TUI (Tomographic Ultrasound Imaging)
- VOCAL
- VCI (Volume Contrast Imaging)
- XTD (Extended Field of View)
- 4D Biopsy
- STIC
- SonoNT
- SonoRender Start
- SonoAVC[®]follicle
- SonoVCAD[®]heart
- SonoVCAD[®]labor
- HD-Flow[®]
- HD-Zoom
- Volume Cine



General specifications

Dimensions and weight

Height	70 mm (2.75 in)
Width	391 mm (15.39 in)
Depth	378 mm (14.88 in)
Weight (no Peripherals)	Approx. 5.6 kg (12.3 lb)

Electrical power

Voltage	100 – 240 V
Frequency	47/63 Hz

Console design

1 Active Probe Port
Integrated HD: 160 GB
2 USB Ports
RJ 45 LAN port
1 VGA Out Port
1 proprietary Docking Port
1 proprietary Battery Slot
Handle

User interface

Operator keyboard

Backlit alphanumeric keyboard
Ergonomic hard key layout
Interactive back-lighting
Programmable print/store/export keys for printing, archiving and exporting

Monitor

High-Resolution 15-inch TFT LCD Screen
Resolution: 1024 x 768
Vertical: 60 Hz
Image size: 800 x 600
High brightness with 350 cd/m ² typical, used at 40%
Wide image area: 800 x 550 for ultrasound images
Digital Brightness adjustment

System overview

Applications

Obstetrics
Gynecology
Abdominal
Small Parts
Peripheral vascular
Pediatrics
Urology
MSK
Neuro
Cardio

Operating Modes

B-Mode (2D)
M-Mode (M)
M-Color-Mode (MC)
Color Flow Mode (C)
Power Doppler Imaging (PD)
HD-Flow Imaging (HD-Flow)
PW Doppler (PW)
Extended View (XTD View)
Volume Mode (3D/4D):
• 3D Static
• 3D with Color Flow
• 4D Real-Time
• VCI
• STIC

Scanning methods

Electronic Convex
Electronic Linear
Mechanic Volume Sweep

Transducer types

Convex Array
Linear Array
Volume probes 4D Convex Array
Volume probes 4D Linear Array
Volume probes 4D Microconvex Array

System standard features

3D/4D Mode
Innovative user interface with onscreen menus
HD-Flow
Automatic Tissue Optimization (AO)
Coded Harmonic Imaging
XTD
SRI
CRI
Static 3D Mode: <ul style="list-style-type: none">• B-Mode only• B + Power Doppler Mode• B + CFM Doppler Mode• B + HD-Flow Mode• B + CRI
• B + SRI
• B + SRI + CFM
• B + SRI + PD
• B + SRI + HD-Flow
Focus Frequency Composite (FFC)
High Resolution Zoom (HD Zoom)
Pan Zoom
Beam Steering
Virtual Convex
BetaView
SonoNT [†]
SonoRender Start
Patient information database
SonoView II: On-board image/data storage software, storage on external USB mass storage or internal hard drive
Real-Time Automatic Doppler Calculations
Standby Mode

[†]Regional availability limitation

Measurement & Calculations including Worksheets/Report for:

Obstetrics
Gynecology
Abdominal
Small Parts
Vascular
Pediatrics
Urology
Cardiology
Neurology
MSK

System Options

3D/4D Expert
4D View PC Software
DICOM® 3
4D Biopsy
VCI
XTD
Cart with integrated power supply and three probe connectors

GoPack carrying case
SonoVCAD ^{heart}
SonoAVC ^{follicle}
SonoVCAD ^{labor}
STIC
VOCAL

Peripherals

Printers <ul style="list-style-type: none">• B/W Printer• Color Printer• Bluetooth Line Printer
External USB DVD Writer
USB Stick
USB Hub
Video Converter
WLAN USB Stick
DVD Recorder
Secondary Battery
Footswitch
LAN Optical Isolation Box
USB microphone
Isolation Transformer

Display modes

Simultaneous Capability <ul style="list-style-type: none">• B + PW• B + CFM, B + PD, B + HD-Flow• B + M• B + 3D, B + 4D• B + CRI• B + SRI• B + CRI + SRI• B + SRI/4D + SRI• B + CRI/STIC + CRI• B + SRI/STIC + SRI• B + CRI + SRI/STIC + CRI + SRI• B/B + CRI• B/B + SRI• B/B + SRI + CRI• B/CFM + SRI• B/PD + SRI• B/HD-Flow + SRI
Real-Time Triplex Mode <ul style="list-style-type: none">• B/CFM/PW• B/PD/PW• B/HD-Flow/PW
Selectable alternating Modes <ul style="list-style-type: none">• B + PW• B/CFM + PW• B/PD + PW• B/HD-Flow + PW• B + CFM or PD or HD-Flow

System overview *(cont.)*

Display modes *(cont.)*

Multi-image (split, quad):

- Live and/or frozen: B + B, B/CFM + B/CFM, or B/PD + B/PD or B/HD-Flow + B/HD-Flow
- Split simultan: B + B/CFM or B + B/PD or B + B/HD-Flow
- Split: B + PW or M
- Split: Frame review/XTD-View
- Quad: B + B + B + B, B/CFM + B/CFM + B/CFM + B/CFM or B/PD + B/PD + B/PD + B/PD or B/HD-Flow + B/HD-Flow + B/HD-Flow + B/HD-Flow
- Independent Cine playback
- Quad: A + B + C + 3D
- 3 x 3: TUI overview + 8 parallel slices
- Quad: TUI overview + 3 slices

Zoom Read/Write

Colorized Image:

- Colorized B
- Colorized M
- Colorized PW
- Colorized 3D

Time line display:

- Independent Dual B/PW Display
- Display Formats: Top/Bottom selectable format (Size: 1/2:1/2; 1/3:2/3; 2/3:1/3)

Display annotation

Patient Name:

- Last: max. 32 characters
- First: max. 15 characters
- Middle: max. 15 characters

ID: max. 32 characters

Accession #: max. 16 characters

Hospital Name: max. 30 characters

Sonographer: max. 32 characters

Gestational age

Date: 3 Types selectable:

- MM/DD/YY
- DD/MM/YY
- YY/MM/DD

Time: 2 types selectable:

- 24 hours
- 12 hours

Probe Name

Application Name

Gray Scale bar

Depth Scale

Focal Zone Marker

Frame Rate

Zoom Start/Depth

B-Mode:

- User program
- Acoustic Power
- Receiver Frequency
- Gain
- Dynamic Contrast
- Gray Map
- Edge Enhance
- Persistence
- SRI, CRI
- Focal Zone Markers
- Depth Scale Marker
- Probe Orientation

M-Mode

- Gain
- Dynamic Contrast
- Edge Enhance
- Reject
- M-Cursor
- Time Scale

Doppler Mode

- Acoustic Power
- Gain
- Angle
- Sample Volume Depth and Width
- Wall Motion Filter
- Velocity or Frequency Scale
- Spectrum Inversion
- Time Scale
- PRF
- Doppler Frequency

Color Flow Doppler Mode

- Acoustic Power
- Color Gain
- Color Balance
- Color Balance Marker
- Quality
- Wall Motion Filter
- PRF
- Color Map
- Color Scale: Symmetrical Velocity Imaging and Color Velocity Range
- Spectrum Inversion

3D/4D Mode

- 3D/4D Sub Program
- Threshold
- Quality
- Volume Box Angle
- Mix
- Acquisition Mode
- Compression
- Orientation Markers

TGC Curve

Cine Frame Number

Body Pattern

Imaging State (Live, Cine, Update)

Measurement Results

Displayed Acoustic Output:

- TIS: Thermal Index Soft Tissue
- TIC: Thermal Index Cranial (Bone)
- TIB: Thermal Index Bone
- MI: Mechanical Index
- Power output

Biopsy Guide Line

Trackball Status

System Status (network, battery, printer)

GE Logo

System parameters

System setup

Pre-programmable categories date format

User Programmable Preset Capability User program

Languages: English, French, German, Spanish, Italian, Norwegian, Dutch, Finnish, Swedish, Danish

Up to 400 Programmable Annotations organized in 10 anatomical groups

Measure setup

M & A Setup including 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

Pre-processing

Write Zoom up to 8x

B/M-Mode:

- Gain
- TGC
- Dynamic Range
- Acoustic Output
- Transmission Focus Position
- Transmission Focus Number
- Transmission Frequency
- Edge Enhancement
- Persistence Control
- Line Density Control
- Reject
- Sweep Speed
- M-Cursor position

PW-Mode:

- Gain
- Dynamic Range
- Acoustic Output
- Transmission Frequency
- PRF
- Wall Motion Filter
- Sample Volume Gate
- Length, Depth, Pos
- Velocity Scale
- Sweep Speed

Color Flow Mode

- CFM
- Acoustic Output
- PRF
- Wall Motion Filter
- Line density
- Ensemble
- Dynamic
- Smooth (Rise and Fall)
- Frequency
- Balance
- Line Filter
- Quality
- Artifact Suppression

Post-processing

Read Zoom: max.: 2.4 (with HD-Zoom functionality up to 22x zoom)

Max. Zoom (Write + Read) up to 16x

B/M-Mode:

- Gray Map
- Colorized B and M

PW Mode:

- Gray Map
- Base Line Shift
- Angle Correction
- Colorized D
- Scale (kHz, m/s, cm/s)
- Trace
- Invert

Color Flow

- Color Map
- CFM Display Threshold
- Display Mode (V, V-T, V-P, P-T, T)
- Scale
- Base Line

Image processing and presentation

Digital Beam former

184.889 channels MLA2

239 dB Dynamic Range, adjustable by selecting 12 Dynamic Contrast Curves

Displayed Imaging Depth: 0 – 30 cm

Minimum Depth of Field: 0 – 1 cm (Zoom, probe dependent)

Maximum Depth of Field: max. 30 cm/11.8 in (depends on used probe)

Transmission Focus: 1 – 5 Focus Points selectable (probe and application dependent)

Focal Zone position, up to 7 steps

Continuous Dynamic Receive Focus/Continuous Dynamic Receive Aperture

256 shades of gray

16.8 Million Colors 24 bit

Image Reverse: Right/Left

Rotation: 0°, 180°

Cine Memory/Image Memory

Cine Memory: up to 140 MB (up to 3000 2D images)

Dual Image Cine Display

Quad Image Cine Display

Cine image number display

Cine Review Loop

Cine Review Speed: 4 speeds: 25/50/100/200%

Length of Cine Sequence Review selectable (start/end image)

Measurements/Calculations & Annotations on Cine Playback

Image/volume storage

On-board data storage: storage of:

Images data stored as:

- JPEG files
- DICOM file

Volume files:

- Format: Proprietary
- Size: typically 0.8 – 5 MB (depending on probe and adjusted volume size)

Lossy and lossless compression available

Cine Review

Single Volume (raw data, conversion to Cartesian format)

Volume Cine (raw data)

Image processing and presentation *(cont.)*

Image/volume storage *(cont.)*

3D Movie
Measure Reports
Information from past exams
Export functions:
• Format: BMP, TIFF or JPEG
• Volume (proprietary format)
Export to: DVD/CD + (R)W, Network, USB storage devices
E-mail: data files as attachment
Backup function to: DVD/CD + (R)W, Network, USB storage devices
AVI-Files: conversion and export to: DVD/CD + (R)W, Network, USB storage devices
Hard Drive Data Storage: 150 GB

Connectivity

Ethernet network connection
WLAN network connection
2 USB ports for hard disks/memory sticks
DICOM support (option):
• Verify
• Print
• Store
• Modality Worklist
• Structured Reporting
• Storage Commitment
• MPPS (Modality Performed Procedure Step)
• Media Exchange
• Off network/mobile storage queue

Scanning parameters

B-Mode

B Acoustic Power	1 – 100%
B Gain	±15 dB range, 1 dB steps
Slide pots	±15 dB
Dynamic range	Max. 128 dB, 12 dynamic contrast curves
Persistence	8 steps
B Gray Scale Map	9 maps
B Edge Enhancement	5 steps
Line Filter	3 steps
Reject	Range 0 – 255, step size 5
Frequency Selection	3 steps
Quality (Line Density)	3 steps
Scanning Size	FOV or Angle depending on probe
B Colorization	6 chroma maps
BetaView	Volume probes only

M-Mode

M Acoustic	1 – 100%
M Gain	±15 dB range, 1 dB steps
Slide pots	±15 dB
Dynamic range	Max. 128 dB, 12 dynamic contrast curves
M Gray Scale Map	9 maps
M Edge Enhancement	5 steps
M Sweep Speed	4 types
M Colorization	6 chroma maps
M Reject	Range 0 – 255, step size 5

M-Color Flow Mode

Acoustic MCFM Power	1 – 100%
Frequency range	1 – 15 MHz (Depending on the probe, 3 steps high, mid, low)
Color Map	8 maps
CFM Gain	±15 dB range, 0.2 dB steps
CFM Velocity Scale Range	
PRF	150 Hz – 13 kHz
Wall Filter	8 – 3000 Hz
Ensemble (color shots per line)	8 – 16, step size 1
Gentle color filter	
Line Filter	8 steps
Smooth filter	Rise: 12 steps Fall: 12 steps
CFM Spectrum Inversion	
CFM Baseline Shift	17 steps
Pre-settable and independently adjustable B-Mode gain in B/CFM mode	
CFM Threshold	1 – 255 steps
Balance	25 – 225, step size 5
Artifact suppression	On/Off
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 3 scales (kHz, cm/s, m/s)

Spectral Doppler Mode (PW)

Acoustic Power	1 – 100%
Transmit Frequency Range	PW: 2 – 15 MHz Gain: +15/-25 dB range, 1 dB steps
Displayed dynamic range	10 – 40 dB (15 steps)
Gray Scale	9 maps
PW Wall Filter	70 – 500 Hz, 7 steps, PRF dependent
Colorization	6 chroma maps
PW PRF	1.3 – 22.1 kHz
PW: Velocity Scale Range: (Depending on probe Frequency)	2 MHz, 0°, max. zero shift Range: 1 cm/s – 8 m/s 2 MHz, 60°, max. zero shift Range: 1 cm/s – 16 m/s
PW Sweep Speed	Simplex (2.2, 3.3, 4.4, 6.6, 10 m/s) Duplex/Triplex (4.4, 6.6, 10 m/s)
Time Resolution	Simplex 2.2, 3.3, 4.4, 6.6, 10 m/s Duplex/Triplex 4.4, 6.6, 10 m/s
Gate Size	0.7 mm – 15 mm, 11 steps
Spectrum Analyzer (FFT)	Max. 256 channels 255 amplitude levels
Angle Correction	±0 – 85°, 1° step available before Freeze and after Freeze
Steered Linear	0° – 25° (Depending on probe)
Spectrum Inversion	
Baseline Shift	±8 steps from center
Doppler Auto Trace	

Color Flow Mode

Acoustic Power	1 – 100%
Frequency range	1 – 15 MHz (Depending on the probe, 3 steps high, mid, low)
Color Map	8 maps
CFM Gain	30 dB range, 0.2 dB steps
CFM Velocity Scale Range	PRF: 150 Hz to 13 kHz (less than ±0.3 cm/s, max.: ±5.5 m/s)
Wall Filter	8 – 3000 Hz
Ensemble (color shots per line)	7 – 31, step size 1
Line Density	10 steps
Gentle color filter	
Line Filter	8 steps
Smooth filter	Rise: 12 steps Fall: 12 steps
CFM Window Size	Max.: same as B-image size
Maximum Steerable Angle	±25° (probe dependent)
CFM Spectrum Inversion	
CFM Baseline Shift	17 steps
Pre-settable and independently adjustable B-Mode Gain in B/CFM-Mode	

CFM Threshold	1 – 255 steps
Balance	25 – 225, step size 5
Artifact suppression	On/Off
Color Display Mode	V (Velocity) V-T (Velocity + Turbulence) V-P (Velocity + Power) T (Turbulence) P-T (Power + Turbulence)
Real-Time Triplex Mode	B + CFM/PW in any depth 3 scales (kHz, cm/s, m/s)

Power Doppler Imaging (PD)

Acoustic Power	1 – 100%
Frequency range	1 – 15 MHz (Depending on the probe, 3 steps high, mid, low)
PD Map	8 maps
Gain	30 dB range, 0.2 dB steps
Velocity Scale Range	PRF: 150 Hz – 13 kHz Wall Filter: 8 – 3000 Hz
Ensemble (color shots per line)	7 – 31, step size 1
Line Density	10 steps
Gentle color filter	
Line Filter	8 steps
Smooth filter	Rise: 12 steps Fall: 12 steps
PD Window size	Max.: same as B-image size
Maximum Steerable Angle	±25° (probe dependent)
Pre-settable and independently adjustable B-Mode Gain in B/PD-Mode	
PD Threshold	1 – 255 steps
Artifact suppression	On/Off
Balance	25 – 225, step size 5
Real-Time Triplex Mode	B + CFM/PW in any depth

HD-Flow

Acoustic Power	1 – 100%
Frequency range	1 – 16 MHz (Depending on the probe, 3 steps high, mid, low)
HD Color Map	8 maps
HD Gain	±15 dB range, 0.2 dB steps
HD Velocity Scale Range	PRF: 150 Hz to 20.5 kHz (less than ±0.3 cm/s, max.: ±2, 12 m/s)
Wall Motion Filter	8 – 3000 Hz, 7 steps
Ensemble (color shots per line)	7 – 31, step size 1
Line Density	10 steps
Line Filter	8 steps
Smooth filter	Rise: 12 steps Fall: 12 steps

HD Window Size	Max.: same as B-image size
Maximum Steerable Angle	±25° (probe dependent)
HD Spectrum Inversion	
Pre-settable and independently adjustable B-Mode Gain in B/HD-Mode	
HD Threshold	1 – 255 steps
Balance	25 – 225, step size 5
Artifact suppression	On/Off
Real-Time Triplex Mode	B + HD-Flow/PW in any depth

Auto Optimization (AO)

Available in:

- B-Mode
- PW-Doppler

Focus Frequency Composite (FFC)

Available on the following probes:

- 4C-RS
- AB2-7-RS
- E8C-RS
- RAB2-5RS-RAB4-8RS
- RIC5-9W-RS
- RNA5-9RS
- IC5-9W-RS
- RAB2-6-RS
- 8C-RS

Virtual Convex

Provides a convex field of view for all linear transducers

- 12L-RS
- SP10-16-RS
- 9L-RS
- RSP6-16-RS

Volume Mode (3D/4D)

Acquisition Modes

3D Static: B-Mode (incl. CRI)

3D Angio: 3D/PD (B/Power Doppler)

3D Color : 3D/CFM (B/Color Flow Mode)

3D HD-Flow: 3D/HD-Flow (B/HD-Flow)

4D Real-Time

4D Biopsy (opt.)

VCI-A (opt.)

VCI-C (opt.)

STIC: Fetal Cardio (opt.) (incl. CRI)

STIC Angio: B/PD (opt.)

STIC CFM: B/Color Doppler (opt.)

STIC HD-Flow: B/HD-Flow (opt.)

Visualization Modes

3D Rendering (diverse surface and intensity projection modes)

Sectional Planes (3 Section planes perpendicular to each other)

Niche: 3D Static only

VOCAL (optional): manual segmentation tool + threshold

Volume: measure volume below and above a threshold

TUI (optional): Tomographic Ultrasound Imaging (overview image + parallel slices)

VCI Static (optional): Apply VCI to 3D Static only (Sectional planes with VCI)

SonoVCAD*heart* (optional)

SonoAVC*follicle* (optional)

SonoVCAD*labor* (optional)

Render Modes

Surface texture

Surface Smooth

Max-, Min- and X-ray (average intensity projection)

Gradient

Inversion

Glass Body

Display Graphics

Rotation axis, center point

ROI box, 3D Frame

Temporary display of onscreen controls (rotation, translation)

Measurements/Calculations

Generic B-Mode and 3D

Distance

- Distance (Point to Point)
- Distance (Line to Line)
- 2D Trace (Trace Length)
- Stenosis (% Dist.)
- 2D trace (Point Length)

Area/Circumference

- Ellipse
- Trace (Line & Point)
- Stenosis (% Area)
- Area 2 Dist.

Volume

- 1 Distance
- 1 Ellipse
- 1 Dist. + Ellipse
- 3 Distance
- Planimetric Volume (3D only)

Angle:

- Angle (3 Point)
- Angle (2 Line)
- Hip Joint

Generic M-Mode

Distance

Time

Velocity

HR

Stenosis (% Dist.)

Generic Doppler Measurements/Calculations

Auto & Manual Trace:

- PS (Peak Systole)
 - ED (End Diastole)
 - MD (Min. Diastole)
 - PS/ED (Ratio)
 - PI (Pulsatility Index)
 - RI (Resistance Index)
 - TAmx (Time avg. max. Velocity)
 - VTI (Velocity Time Integral)
 - Heart Rate
-

Single Measurements:

- Vel, Acceleration, RI, PI, PS/ED, Time, HR
 - PG (Pressure Gradient)
 - PG mean
 - PG max.
-

Real-Time Doppler Auto Measurements/Calculations

PS (Peak Systole)

ED (End Diastole)

PD (Peak Diastole)

MnV (Mean Velocity)

VTI (Velocity Time Integral)

RI (Resistance Index)

PI (Pulsatility Index)

S/D (Ratio)

HR (Heart Rate)

OB Measurements/Calculations

Gestational Age by:

- AC (Abdominal Circumference)
 - APTD (Anterior Posterior Thoracic Diameter)
 - APTDxTTD
 - BOD (Binocular Distance)
 - BPD (Biparietal Diameter)
 - CEREB (Cerebellum)
 - CLAV (Clavicle)
 - CRL (Crown Rump Length)
 - EFW (Estimated Fetal Weight)
 - FIB (Fibula)
 - FL (Femur Length)
 - FTA (Fetal Trunk Area)
 - GS (Gestational Sac)
 - HC (Head Circumference)
 - HL (Humerus Length)
 - LV (Length of Vertebra)
 - MAD (Middle Abdomen Diameter)
 - OFD (Occipital Frontal Diameter)
 - RAD (Radius)
 - TIB (Tibia Length)
 - TTD (Transverse Thoracic Diameter)
 - ULNA (Ulna Length)
-

Gestational Growth by:

- AC (Abdominal Circumference)
- APAD (Anterior Posterior Abdomen Diameter)
- APTD (Anterior Thoracic Diameter)
- APTDxTTD
- BOD (Binocular Distance)

- BPD (Biparietal Diameter)
 - CLAV (Clavicle)
 - CM (Cisterna Magna)
 - CRL (Crown Rump Length)
 - DV (Ductus Venosus)
 - EFW (Estimated Fetal Weight)
 - FIB (Fibula)
 - FTA (Fetal Trunk Area)
 - FL (Femur Length)
 - GS (Gestational Sac)
 - HC (Head Circumference)
 - HL (Humerus Length)
 - LV (Length of Vertebra)
 - MAD (Middle Abdomen Diameter)
 - MCA RI, PI
 - NBL (Nasal Bone)
 - OFD (Occipital Frontal Diameter)
 - RAD (Radius)
 - TAD (Transverse Abdomen Diameter)
 - TIB (Tibia Length)
 - TTD (Transverse Thoracic Diameter)
 - ULNA (Ulna Length)
 - UmArt RI, PI (Umbilical Artery)
 - UtArt RI, PI (Uterine Artery)
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Estimated Fetal Weight (EFW) by:

- AC
 - AC, BPD
 - AC, BPD, FL
 - AC, BPD, FL, HC
 - AC, FL
 - AC, FL, HC
 - BPD, FTA, FL
 - BPD, MAD, FL
 - BPD, TTD
 - BPD, APTD, TTD, FL
 - BPD, APTD, TTD, LV
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Calculations and Ratios

- FL/BPD
 - FL/AC
 - FL/HC
 - HC/AC
 - CI (BPD/OFD)
 - Va/Hem, Vp/Hem
 - LHR (Peralta)
 - LTR
 - CVR (Peranteau)
-

Tables/Calculations by:

- ASUM, Brenner, Campbell, CFEF, Chitty, Daya, Eik-Nes, Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Holländer, Jeanty, Johnsen, JSUM, Kurmanavicius, Kurtz, Marsal, Merz, Nelson, Nicolaidis, O'Brien, Osaka, Rempen, Persson, Robinson, Shinozuka, Tokyo University, Shephard, Sabbagha, Warda, Williams, Yarkoni, Alexander, Lai, Leung, Medvedev, Pexters, Sahota
 - Programmable OB Tables
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OB Report including:

- Measure results (Calc)
- Measure results (Generic)
- Fetal Qualitative Description (Anatomical survey)
- Fetal Environmental Description (Biophysical profile)
- Fetal Graphical Trending
- Fetal Compare

Gyn Measurements/Calculations

- Uterus
- Right/Left Ovary
- Right/Left Follicle
- Fibroid
- Endometrial thickness (Dist., Double Dist.)
- Cervix Length
- Left/Right Ovarian Artery
- Left/Right Uterine Artery
- Pelvic Floor
- FHR
- Summary Reports

Vascular Measurements/Calculations

- Carotid: CCA, ECA, ICA, Bulb, Vertebral, Subclav., Vessel
- UEA: SUBC A, AXILL A, BRACH A, RADIAL A, ULNAR A, GRAFT, Palm A, INNOM A,
- UEV: JUGUL, INNOM V, SUBC V, AXILL, CEPH, BASIL, BRACH, MCUB, RADIAL, ULNAR,
- LEA: COM ILIAC A, EXT ILIAC A, INT ILIAC A, COM FEM A, DEEP FEM A, SUP FEM A, POPL A, ANT TIB A, POST TIB A, PERON A, DORS PED A, GRAFT, PROF A
- LEV: IVC, COM ILIAC V, EXT ILIAC Vein, COM FEM, GSAPH V, FEM V, DEEP FEM V, POPLIT V, L SAPH V, ANT TIB V, POST TIB V, PERON V, PROF V
- Renal: RENAL A, M RENAL A, RENAL V, SEGM A, INTERLO A, ARC A
- TCD: ACA, MCA, PCA, Basilar, A Comb.A, P Comb.A, Vertebral, Vessel, Basilaris
- Vessels
- Summary Reports

Neuro Measurements/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

Cardio Measurements/Calculations

- 2D Mode:
 - LV Simpson (Single & Bi-Plane)
 - 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)
 - AV/LA (Aortic Valve/Left Atrium)
 - PV (Diameter)

• M-Mode:

- Left Ventricle (RVD, IVS, LVD, LVPW)
- Aorta/Left Atrium (AO Root Diam, LA Diam, AV Cusp Sep., AO Root Ampl.)
- MV (D-E, E-F Slope, A-C Interval, E-EPSS)
- HR (Heart Rate)

• Spectral Doppler 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)
- HR (Heart Rate)

• CFM Mode:

- PISA-Radius
- TEI-Index

• Additional Calculations

- Diast. Vol. (Bi)
- Syst. Vol. (Bi)
- Stroke Volume
- Cardiac Output
- Eject. Fraction
- Fract. Shortening FS
- Myocardial Thickness
- LA/AO Ratio
- E/A Peak
- Peak Gradient Acceleration
- Mean Gradient
- Mean Gradient Acceleration
- VTI, TVA, PG, PHT, MVA, AVA, ERO, CVP (Cardio Vascular Profile score, etc.)
- Summary Reports

Abdominal Measurements/Calculations

Liver

Gallbladder

Pancreas

Spleen

Left/Right Kidney

Left/Right Renal Artery

Aorta

Portal Vein

Vessel

Bladder Volume

Summary Reports

Small Parts Measurements/Calculations

Left/Right Thyroid

Left/Right Testicle

Vessel

Summary Reports

URO Measurements/Calculations

Bladder
Prostate
Left/Right Testicle
Left/Right Kidney
Left/Right Renal Artery
Left/Right Dorsal Penile Artery
Vessel
Summary Reports including PSAD, PPSA (1), PPSA (2) calculation

Pediatrics Measurements/Calculations

Left/Right Hip Joint
Pericallosal Artery
Summary Reports

Probes

RAB2-5-RS

Applications	Abdomen, Obstetrics, Gynecology
Max. Bandwidth (-20 dB)	1 – 4 MHz
Number of Elements	192
Convex Radius	46.0 mm
Volume Sweep Radius	22.6 mm
FOV	80° (B), 85° x 80° (Volume scan)
Depth	Max. 30 cm
Foot Print	63.6 x 38.9 mm
Center Frequency	3.2 MHz
Doppler Tx. Frequency	2.0, 2.73, 3.75 MHz
Harm. Tx. Frequency	2.0, 2.3 MHz
Biopsy Guide Available	Single-Angle, Reusable and Disposable

RAB4-8-RS

Applications	Abdomen, Obstetrics, Gynecology, Pediatrics
Max. Bandwidth (-20 dB)	2 – 8 MHz
Number of Elements	192
Convex Radius	46.0 mm
Volume Sweep Radius	22.6 mm
FOV	70° (B), 85° x 70° (Volume scan)
Depth	Max. 26 cm
Foot Print	63.6 x 37.8 mm
Center Frequency	4.4 MHz
Doppler Tx. Frequency	3.0, 3.75, 4.3 MHz
Harm. Tx. Frequency	2.7, 3.0, 2.5 MHz
Biopsy Guide Available	Single-Angle, Reusable and Disposable

RIC5-9W-RS

Applications	Obstetrics, Gynecology, Urology
Bandwidth (-20 dB)	4 – 9 MHz
Number of Elements	192
Convex Radius	11.6 mm
Volume Sweep Radius	11.6 mm
FOV	146° (B), 146° x 120° (Volume scan)
Depth	Max. 16 cm
Foot Print	22.4 x 22.6 mm
Center Frequency	6.6 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	3.75, 4.3 MHz
Biopsy Guide Available	Single-Angle, Reusable

RS6-16-RS

Applications	Small Parts, Vascular, Pediatrics, MSK
Max. Bandwidth (-20 dB)	6 – 18 MHz
Number of Elements	192
Volume Sweep Radius	80.7 mm
FOV	37.4 mm (B), 37.4 mm x 29° (Volume scan)
Foot Print	48.6 x 55.9 mm
Center Frequency	11.5 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	6.0, 5.0 MHz
Biopsy Guide Available	Single-Angle, Reusable and Disposable

RNA5-9-RS

Applications	Abdomen, Small Parts, Obstetrics, Cardio, Pediatrics
Bandwidth (-20 dB)	3 – 9 MHz
Number of Elements	192
Convex Radius	15.4 mm
Volume Sweep Radius	15.4 mm
FOV	117° (B), 117° x 90° (Volume scan)
Depth	Max. 18 cm
Foot Print	26.7 x 22.9 mm
Center Frequency	6.1 MHz
Doppler Tx. Frequency	5.0, 4.3, 3.75 MHz
Harm. Tx. Frequency	5.0, 4.3, 3.75 MHz
Biopsy Guide Available	Single-Angle, Reusable and Disposable

4C-RS

Applications	Abdominal, Obstetrics, Gynecology
Max. Bandwidth (-20 dB)	2 – 5 MHz
Number of Elements	128
Convex Radius	60.5 mm
Volume Sweep Radius	N/A
FOV	58°
Depth	Max. 30 cm
Center Frequency	3.1 MHz
Doppler Tx. Frequency	2, 2.73, 3.33 MHz
Harm. Tx. Frequency	2 MHz
Biopsy Guide Available	Multi-Angle, Biopsy Bracket Reusable

AB2-7-RS

Applications	Abdomen, Obstetrics, Gynecology, Urology, Pediatrics
Max. Bandwidth (-20 dB)	2 – 8 MHz
Number of Elements	192
Convex Radius	41.2 mm
Volume Sweep Radius	N/A
FOV	80°
Foot Print	58.9 x 23.4 mm
Depth	Max. 28 cm
Center Frequency	4.3 MHz
Doppler Tx. Frequency	2.7, 3.3, 4.3 MHz
Harm. Tx. Frequency	2.3, 2.5 MHz
Biopsy Guide Available	Single-Angle, Reusable (PEC83, PEC71)

E8C-RS

Applications	Obstetrics, Gynecology, Urology
Max. Bandwidth (-20 dB)	4 – 10 MHz
Number of Elements	128
Convex Radius	11.4 mm
Volume Sweep Radius	N/A
FOV	123°
Depth	Max. 16 cm
Center Frequency	6.5 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	4.29, 3.75 MHz
Biopsy Guide Available	Single-Angle, Reusable, Disposable

12L-RS

Applications	Small Parts, Peripheral Vascular, Pediatrics, MSK
Max. Bandwidth (-20 dB)	4 – 12 MHz
Number of Elements	192
Volume Sweep Radius	N/A
FOV	37 mm
Depth	Max. 8 cm
Center Frequency	7.7 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	5.0 MHz
Biopsy Guide Available	Reusable, Multi-Angle

9L-RS:

Applications	Obstetrics, Small Parts, Peripheral Vascular, Pediatrics, MSK
Max. Bandwidth (-20 dB)	3 – 8 MHz
Number of Elements	192
Volume sweep radius	N/A
FOV	43 mm
Depth	Max. 14 cm
Foot Print	53.1 x 13.8 mm
Center Frequency	5.3 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	4.29 MHz
Biopsy Guide available	Multi-Angle, Biopsy Bracket Reusable

SP10-16-RS

Applications	Small Parts, Peripherals, Vascular, Pediatrics, MSK
Max. Bandwidth (-20 dB)	7 – 18 MHz
Number of Elements	192
Volume Sweep Radius	N/A
FOV	33.7 mm
Foot Print	43.4 x 12.7 mm
Depth	Max. 6 cm
Center Frequency	12 MHz
Doppler Tx. Frequency	6.0, 7.5, 10 MHz
Harm. Tx. Frequency	6.0, 7.5 MHz
Biopsy Guide available	Single-Angle, Reusable (PEC82, PEC64)

IC5-9W-RS†

Applications	Obstetrics, Gynecology, Urology
Max. Bandwidth (-20 dB)	3 – 10 MHz
Number of Elements	192
Convex Radius	11 mm
Volume Sweep Radius	N/A
FOV	197°
Depth	Max. 16 cm
Center Frequency	5.9 MHz
Doppler Tx. Frequency	5.0, 6.0, 7.5 MHz
Harm. Tx. Frequency	4.29 MHz
Biopsy Guide Available	Disposable

†Regional availability limitation

8C-RS

Applications	Abdominal, Small Parts, Cardiology, Peripheral Vascular, Pediatrics
Max. Bandwidth (-20 dB)	3.6 – 10 MHz
Number of Elements	128
Convex Radius	10.7 mm
Volume Sweep Radius	N/A
FOV	125°
Depth	Max. 16 cm
Center Frequency	6.5 MHz
Doppler Tx. Frequency	7.50, 6.00, 5.00 MHz
Harm. Tx. Frequency	4.29, 4.29, 4.29 MHz

RAB2-6-RS

Applications	Abdomen, Obstetrics, Gynecology
Max. Bandwidth (-20 dB)	2 – 5 MHz
Number of Elements	128
Convex Radius	59.9 mm
Volume Sweep Radius	24 mm
FOV	80° (B), 85° x 80° (Volume scan)
Depth	Max. 30 cm
Foot Print	62.2 x 34.0 mm
Center Frequency	3.3 MHz
Doppler Tx. Frequency	3.33, 2.50, 2.14 MHz
Harm. Tx. Frequency	2.50, 2.0, 2.0 MHz
Biopsy Guide Available	Biopsy H48681ML Disposal with Reusable Bracket

External Inputs and Outputs

Connectivity:

VGA Out
Network (RJ45)
USB (2x)
DC Power Input
Probe connector
Anti-theft lock
Battery slot
Docking Station (Cart)

Safety Conformance

The Voluson i:

This product conforms to the following standards and regulations:

- Listed to UL 60601 by a Nationally Recognized Test Lab
- Certified to CSA 22.2, 60601.1 by an SCC accredited Test Lab
- CB-Test report by National Certification Body
- CE Marked to Council Directive 93/42/EEC on Medical Devices

Conforms to the following standards for safety:

- IEC[†] 60601-1 Electrical medical equipment
- IEC[†] 60601-1-2 Electromagnetic compatibility
- IEC 62304 Software Life Cycle Processes
- IEC[†] 60601-2-37 Particular requirements for the safety of ultrasound medical diagnostic and monitoring equipment
- ISO 10993 Biological evaluation of medical devices
- WEEE (Waste Electrical and Electronic Equipment)

[†]Including national deviations.



imagination at work

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