Voluson *i* BT07

The Compact 4D Choice

Product Description

The Voluson i compact ultrasound system, is an unprecedented combination of Performance and Reliability with industry leading Volume Ultrasound technology to deploy High End Ultrasound Imaging in convenient laptop design.
The Voluson i offers premium image quality for all applications incorporating advanced features.

Highlights

- Lightweight and portable
- Battery operation
- Real-Time 4D
- 3D Multiplanar Display
- 3D Power Doppler
- Automatic Optimization (AO)
- SRI II (Speckle Reduction Imaging II)
- CrossXBeam (CRI)
- TUI (Tomographic Ultrasound Imaging)
- VOCAL
- VCI (Volume Contrast Imaging)
- XTD (Extended field of View)
- 4D Biopsy

Figure 1. Voluson i Portable Volume Ultrasound Technology

General Specifications

Dimensions and Weight

- Height: 59 mm (2.3 in)
- Width: 358 mm (14.2 in)
- Depth: 313 mm (12.4 in)
- Weight (no peripherals): 11 lb (5kg)

Electrical Power

- Voltage: 100 - 250 V
- Frequency: 47/63 Hz

Console Design

- 1 Active Probe Port
- Integrated HD (80 GB)
- 2 USB Ports
- Rj 45 LAN port
- 1 PCMCIA Slot
- 1 VGA Out Port
- 1 proprietary Docking Port
- 1 proprietary Battery Slot

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 1024X768
- Image size: 800x600
- High brightness with 400 cd/m^2 typical, used at 70%
- Wide Image area: 800x560 for Ultrasound images
- Digital brightness & contrast adjustment.
- Brightness/Contrast Control

System Overview

Applications

- Obstetrics
- Gynecology
- Abdominal
- Small-Parts
- Peripher-vascular
- Pediatrics
- Urology
- Oncology
- Orthopedics

Operating Modes

- B-Mode (2D)
- M-Mode (M)
- M-Color-Mode (MC)
- Color Flow Mode (C)
- Power Doppler Imaging (PD)
- PW Doppler (PW)
- Volume Mode (3D/4D):
- 3D Static
- 3D with Color Flow
- 4D Real-Time

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

System Standard Features

- 3D/4D Mode
- State-of-the-art user interface with onscreen menus
- Automatic Tissue Optimization (AO)
- Coded Harmonic Imaging
- Static 3D Mode:
  - B-Mode only
  - B + Power Doppler Mode
  - B + CFM Doppler Mode
- Focus Frequency Composite (FFC)
- Beam Steering
- 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

Measurement & Calculations including Worksheets/Report for:

- Obstetrics
- Gynecology
- Abdominal
- Small-Parts
- Vascular
- Pediatrics
- Urology
- Cardiology
- Neurology
- Orthopedics

System Options

- 4D View PC Software
- DICOM 3
- 4D Biopsy
- VCI
- XTD
- Cart with integrated power supply
- GoPack carrying case

Peripheral

- Printers:
  - Wireless Printer and Bluetooth Receiver
- External USB DVD Writer (always included)
- USB Stick
- USB Hub
- USB Hard Drive
- Video Converter
- PCMCIA WLAN Card
- S-VHS Recorder
- DVD Recorder
- Secondary Battery

- Battery charger
- Footswitch

Display Modes

- Simultaneous Capability
  - B/PW
  - B/CFM, B/PD
  - B/M
  - B/3D
- Real-Time Triplex Mode
  - B/CFM/PW,
  - B/PD/PW
- Selectable alternating Modes
  - B+PW
  - B/CFM+PW
  - B/PD+PW
  - B/PD+PW
- Multi-image (split, quad)
  - Live and/or frozen
  - split: B+B, B/CFM + B/CFM, or B/PD
  - split: B+B/CFM or PD
  - split: B+PW or M
  - quad: B+B+B+B, B/CFM+B/CFM+B/CFM +B/CFM or B/PD
  - Independent Cine playback
  - Quad: A+B+C+3D
- 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: 30 characters max
- 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
  - 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 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: 2 types
  - Power and Symmetrical Velocity Imaging
  - Color Velocity Range
  - Spectrum Inversion
- 3D/4D Mode
  - 3D/4D Sub Program
  - Threshold
  - Quality
  - Volume Box Angle
  - Mix
  - Acquisition Mode
  - TGC Curve
  - Cine Frame Number
- Body Pattern: 111 types organized in 10 anatomical groups
- 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 (dB)
- Biopsy Guide Line
- Trackball function (Trackball and Trackball buttons)
- GE Logo

System Parameters

System Setup

- Pre-programmable categories date format

- User Programmable Preset Capability User program
- 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 Filter
  - Sample Volume Gate
  - Length, Depth, Pos
  - Velocity Scale
  - Sweep Speed
- Color Flow Mode
  - CFM Gain
  - Acoustic Output
  - CFM Velocity Range
  - Wall Motion Filter
  - Line density
  - Ensemble
  - Dynamic
  - Smooth (Rise and Fall)
  - Frequency
  - Balance
  - Line Filter

Post-Processing

- Read Zoom: max: 2.4
- 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)
  - Scale
  - Base Line

Image Processing and Presentation

Digital Beam former

- 8448 channels MLA2
- Up to 150 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: 0 - 30 cm (probe dependent)
- 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 Mio Colors 24 bit
- Image Reverse: Right/ Left
- Rotation: 0°, 180°

CINE Memory/Image Memory

- CINE Memory: up to 256 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 software (SonoView II): storage of:
- Images:
  Size 800*600
  Formats:
  - Uncompressed (1.44 MB)
  - JPEG (typically 50 - 200 KB)
- Volume files:
  Format: Proprietary
  - Size: typically: 0.8 - 5MB (depending on probe and adjusted volume size)
- Cine Review
- Single Volume (raw data, conversion to Cartesian format)
- Volume Cine (bitmap images)
- 3D Movie
- Measure Reports
- Information from past exams
- Export functions:
- Format: BMP, TIFF or JPEG

- Export to: USB storage devices
- Network connection: Export Format: DICOM
- E-Mail: data files as attachment
- Backup function to internal HD or external USB storage devices, Network
- AVI-Files: conversion and export to: external USB storage devices
- Hard Drive Data Storage (SonoView): 70 GB

Connectivity

- Ethernet network connection
- WLAN network connection
- 2 USB ports for hard disks/memory sticks
- DICOM support (option)
- Verify
- Print
- Store
- Modality Work list
- Media Exchange
- Off network / mobile storage queue

Scanning Parameters

B-Mode

- B Acoustic Power: 1-100%
- B Gain: +/-15dB range, 1dB steps
- Slide pots: +/- 15dB
- 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: 8 chroma maps

M-Mode

- M Acoustic 1-100%
- M Gain: +/-15dB range, 1dB steps
- Slide pots: +/- 15dB
- M Gray Scale Map: 9 maps
- M Edge Enhancement: 5 steps
- M Sweep Speed: 4 types
- M Colorization: 5 chroma maps
- M Reject: range 0-255, step size 5,

M-Color Flow Mode

- Acoustic MCFM Power: 1-100%
- Frequency range: 1-15Mhz (Depending on the probe, 3 steps high, mid, low)
- Color Map: 8 maps
- CFM Gain: 30dB range, 1 dB steps
- CFM Velocity Scale Range:
- PRF: 100Hz to 13kHz
- Wall Filter: 8 - 3000 Hz
- Ensemble (color shots per line)
- 8-16, step size 1
- Gently color filter
- Smooth filter:
- Rise: 12 steps
- Fall: 12 steps
- CFM Spectrum Inversion
- CFM Baseline Shift: 17 steps
- Pre-settable and independently adjustable B-, M and MCFM Gain
- 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

Spectral Doppler Mode (PW)

- Acoustic Power: 1-100%
- Transmit Frequency Range:
- PW: 1 - 15Mhz
- Gain: +15/-25dB range, 1dB steps
- Gray Scale: 9 maps
- PW Wall Filter: 70 - 500Hz, 7 steps, PRF dependent
- Colorization: 6 chroma maps
- PW PRF: 1.3-22.0 kHz
- PW: Velocity Scale Range: (Depending on probe Frequency)
- 2 MHz, 0°, max. zero shift range: 1cm/s - 8m/s
- 2 MHz, 60°, max. zero shift range: 1cm/s - 16m/s
- PW Sweep Speed: 4 types
- Time Resolution:
- Simplex 2.2, 3.3, 4.4, 6.6,10 msec
- Duplex/Triplex 4.4, 6.6,10 msec.
- Gate Size: 0.7mm - 15mm 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: 1-15Mhz (Depending on the probe, 3 steps high, mid, low)
- Color Map: 8 maps
- CFM Gain: 30dB range, 0.2 dB steps
- CFM Velocity Scale Range:
- PRF: 100Hz to 11kHz
  - 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
- Gently 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

Power Doppler Imaging (PD)

- Acoustic Power: 1-100%
- Frequency range: 1-15Mhz (Depending on the probe, 3 steps high, mid, low)
- PD Map: 8 maps
- Gain: 30dB range, 0.2 dB steps
- Velocity Scale Range:
- PRF: 100Hz to 11kHz
- Wall Filter: 8 - 3000 Hz
- Ensemble (color shots per line)
- 7-31, step size 1
- Line Density: 10 steps
- Gently color filter
- Line Filter: 8 steps
- Smooth filter:
- Rise: 12 steps
- Fall: 12 steps
- PD Window size:
- max: same as B-image size
- Maximum Steer able Angle +/- 25 ° (probe dependent)
- Pre-settable and independently adjustable B-Mode Gain in B/PD-Mode
- PD Threshold: 0 - 255 steps
- Artifact suppression: on/off
- Balance: 25 - 225, step size 5
- Real-Time Triplex Mode:
- B + CFM/PW in any depth

Auto Optimization (AO)

Available in:

- B-Mode
- PW-Doppler
- Tissue Harmonic Imaging (THI)
- Harmonic Imaging (HI)
- Available on all probes

Focus Frequency Composite - (FFC)

Available on the following probes:

- 4C-RS
- E8C-RS
- RAB2-5RS- RAB4-8RS
- RIC5-9RS
- RNA5-9RS

Virtual Convex

Provides a convex field of view for all linear transducers

- 12L-RS
- RSP6-16-RS

Volume Mode (3D/4D)

Acquisition Modes

- 3D Static: B-Mode (incl. CRI)
- 3D Angio: B/Power Doppler
- 3D CFM: B/Color Doppler
- 4D Real-Time

Visualization Modes

- 3D Rendering (diverse surface and intensity projection modes)
- Sectional Planes (3 Section planes normal to each other)
- Niche: 3DStatic only
- TUI: Tomographic Ultrasound Imaging

Render Mode

- Surface texture, Surface Smooth, max-, min- and x-ray (average intensity) projection, Gradient, Glass Body, Mix Mode of two render Modes
- 3D Movie
- Curved Render start
- MagiCut: 3D Cut tool
- Display Format:
- Quad: A-/B-/C-Plane/3D
- Dual: A-Plane/3D
- Single: 3D or A- or B- or C-Plane
- 4D Volume Frames/sec: max 25 (typical: 4-10, depending on scan parameters)
- 4D Volume Cine: 128 bitmap images

Measurements / Calculations

Generic B-Mode and 3D

- Distance
- Distance (Point to Point)
- Distance (Line to Line)
- 2D Trace (Trace Length)
- Stenosis (% Dist)
- Area/Circumference
- Ellipse
- Trace (Line & Point)
- Stenosis (% Area)

Volume

- 1 Distance
- 1 Ellipse
- 1 Dist. + Ellipse
- 3 Distance
- Planimetric Volume (3Donly)
- Angle:
- Angle(3 Point)
- Angle(2 Line)
- Hip Joint
- Histogram
-

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)
- TAmax (Time avg. max. Velocity)
- VTI (Velocity Time Integral)

- Heart Rate
- Single Measurements:
- Vel, Acceleration, RI, PI, PS/ED, Time, HR
- Real-Time Doppler Auto Measurements / Calculations
- PS (Peak Systole)
- ED (End 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)
- 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)
- CEREB (Cerebellum)
- CLAV (Clavicle)
- CM (Cisterna Magna)
- CRL (Crown Rump Length)
- EFW (Estimated Fetal Weight)
- 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
- OFD (Occipital Frontal Diameter)
- RAD (Radius)
- TAD (Transverse Abdomen Diameter)
- TIB (Tibia Length)
- TTD (Transverse Thoracic Diameter)
- ULNA (Ulna Length)
- UmA RI, PI
- 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
- Calculations and Ratios
- FL/BPD
- FL/AC
- FL/HC
- HC/AC
- CI (Cephalic Index)
- Va/Hem, Vp/Hem
- AFI (Amniotic Fluid Index)
- 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, Nicolaides, O'Brien, Osaka, Rempen, Persson, Robinson, Shinozuka, Tokyo University, Shephard, Sabbagha, Warda, Williams, Yarkoni
- Programmable OB Tables
-

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

- Right Ovary Length, Width, Height
- Left Ovary Length, Width, Height
- Right Kidney Length, Width, Height
- Left Kidney Length, Width, Height
- Uterus Length, Width, Height
- Ovarian Volume
- ENDO (Endometrial thickness)
- Cervix Length
- Follicular measurements (12)
- Ovarian Artery
- Uterine Artery
- Vessel
- Summary Reports
-

Vascular Measurements/Calculations

- CCA (Common Carotid Artery)
- ICA (Internal Carotid Artery)
- ECA (External Carotid Artery)
- Vertebral Artery
- Subclavia
- Bulb
- Vessels

- Summary Reports

Neuro Measurements/Calculations

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

Cardio Measurements / Calculations

- 2D Mode:
  - Simpson (Single & Bi-Plane)
  - Volume (Area Length)
  - LV-Mass (Epi & Endo Area, LV Length)
  - 2D Measurements (RVD, IVS, LVD, LVPW)
  - LVOT Diameter
  - RVOT Diameter
  - MV (Dist A, B, Area, PISA
  - TV (Diameter)
  - AV/LA (Ao & LA Diam.)
  - PV (Diameter)

- M-Mode:
  - Left Ventricle (LV): RVD, IVS, LVD, LVPW
  - Aorta/Left Atrium: ARD, Cusp, LAD
  - MV (D-E, E-F Slope, A-C Interval, E-EPSS, E-S Dist.)
  - HR (Heart Rate)

- Spectral Doppler Mode:
  - MV (Mitral Valve)
  - R-R Interval
  - AoV (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
  - PISA-Alias Velocity

- 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 Gradient
  - Acceleration
  - Mean Gradient,
  - VTI, TVA, PHT, MVA, AVA, ERO, etc

Abdominal Measurements/Calculations

- Liver
- Gallbladder
- Pancreas
- Spleen
- Left/Right Kidney
- Renal Artery
- Aorta
- Portal Vein
- Vessel
- Summary Reports

Small Parts Measurements/Calculations

- Thyroid
- Testicle
- Vessel
- Summary Reports

URO Measurements/Calculations

- Bladder
- Prostate
- Testicle
- Left/Right Kidney
- Vessel
- Summary Reports including PSAD, PPSA(1), PPSA(2) calculation

Pediatric Measurements/Calculations

- Hip Joint

Probes

RAB2-5-RS

- Applications: Abdomen, OB Gyn, Uro
- Maximum Band Width (-20dB): 1.5 – 5.3 MHz
- Number of Elements: 192
- Convex Radius: 40,5 mm
- Volume Sweep Radius: 20,71mm
- FOV: 80° (B), 85° x 80° (Volume scan)
- Foot Print: 62,21 x 44,53
- Doppler Transmission Frequency.: 2.0, 2.72, 3.75 MHz
- Harmonic Transmission Frequency: 2.0, 2.3 MHz
- Biopsy Guide Available: Single-Angle, Reusable and Disposable

RAB4-8-RS

- Applications: Abdomen, OB Gyn, Uro
- Maximum Band Width (-20dB): 2 – 7.5 MHz
- Number of Elements: 192
- Convex Radius: 41,6 mm
- Volume Sweep Radius: 19,95mm
- FOV: 70° (B), 85° x 70° (Volume scan)
- Foot Print: 55,03 x 42,64
- Doppler Transmission Frequency.: 3.0, 3.75, 4.2 MHz

- Harmonic Transmission Frequency: 2.8, 3.0, 2.5 MHz
- Biopsy Guide Available: Single-Angle, Reusable and Disposable

RIC5-9-RS Wide Band Convex Volume Probe

- Applications: OB, GYN, Urology
- Band Width(-20dB):3.7-9.3MHz
- Number of Elements: 192
- Convex Radius: 11.6 mm
- Volume Sweep Radius: 11.6 mm
- FOV: 150° (B), 150°*120° (Volume scan)
- Foot Print: 30.4 x 30.3mm
- Doppler Transmission Frequency.: 5.0, 6.0, 7.5 MHz
- Harmonic Transmission Frequency: 3.75, 4.3, 4.0MHz
- Biopsy Guide Available: Single-Angle, Reusable and Disposable

RSP6-16-RS

- Applications: Small Parts, Urology. Vascular, Pediatrics, Ortho
- Maximum Band Width (-20dB): 5.6 - 18.4 MHz
- Number of Elements: 192
- Volume Sweep Radius: 80mm
- FOV: 37.4 mm (B); 37.4 mm * 29° (Volume scan)
- Foot Print: 38.4 x 44.5 mm
- Doppler Transmission Frequency.: 5.0, 6.0, 7.5 MHz
- Harmonic Frequency: 6.0, 5.0 MHz
- Biopsy Guide Available: Single-Angle, Reusable and Disposable

RNA5-9-RS

- Wide Band Convex Volume Probe
- Applications: Abdomen, SM P, OB, CARDIO, PED
- Band Width (-20dB): 3.3–9.1MHz
- Number of Elements: 192
- Convex Radius: 15.4 mm
- Volume Sweep Radius: 14.5mm
- FOV: 119° (B), 119°*90° (Volume scan)
- Foot Print: 32,25 x 29,19mm
- Doppler Transmission Frequency.: 5.0, 4.3, 3.75 MHz
- Harmonic Transm. Frequency: 5.0, 4.3, 3.75 MHz
- Biopsy Guide Available: Single-Angle, Reusable and Disposable

4C-RS

- Applications: Abdominal, Obstetrics, Gyn, Urology, Periphero-vascular
- Maximum Band Width (-20dB): 1.6 - 4.6 MHz
- Number of Elements: 128
- Volume Sweep Radius: n/a
- Radius of curvature: 60mm
- Elevation Aperture: 13mm
- Centre frequency: 3.1MHz
- Doppler Transmission Frequency: 2, 2.73, 3.33 MHz
- Harmonic Frequency: 2 MHz
- Biopsy Guide Available: Multi-Angle, Disposable

E8C-RS

- Applications: OB, GYN, Urology
- Maximum Band Width (-20dB): 3.6 - 10 MHz
- Number of Elements: 128
- Volume Sweep Radius: n/a
- FOV: 122.6° Elevation Aperture 5mm
- Doppler Transmission Frequency.: 5.0, 6.0, 7.5 MHz
- Harmonic Frequency: 4.29, 3.75 MHz
- Biopsy Guide Available: Single-Angle, Reusable

12L-RS

- Small Parts, Peripheral Vascular, Pediatrics, Ortho
- Maximum Band Width (-20dB): 3.7-11.3 MHz
- Number of Elements: 192
- Volume Sweep Radius: n/a
- FOV: 38. 016mm (B) , Elevation Aperture 4mm
- Doppler Transmission Frequency.: 5.0, 6.0, 7.5 MHz
- Harmonic Frequency: 5.0 MHz

External Inputs and Outputs

Connectivity:

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

Safety Conformance

The Voluson i is:

- Listed to UL 60601-1 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 60601-1-1 Electrical medical equipment
- IEC 60601-1-2 Electromagnetic compatibility

- IEC 60601-1-4 Programmable medical systems
- IEC 61157 Declaration of acoustic output
- ISO 10993 Biological evaluation of medical devices
- NEMA UD3, UD2 Acoustic output display (MI, TIS, TIB, TIC)
- IEC 60601-2-37 Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment