# Ecograf

| SPECIFICATII TEHNICE DEPLINE SOLICITATE | SPECIFICAȚII TEHNICE OFERTATE, Ecograf, model Versana Active Vet. |
|---|---|
| *Metode de scanare:* Convexa, Lineara, Microconvexa, Transvaginala, Endorectala | Metode de scanare: Convexa, Lineara, Microconvexa, Transvaginala, Endorectala Tehnologie: Full digital, DVD-RV, Windows XP, identificare automata a sondei, salvare configuratie |
| *Tehnologie:* Full digital, DVD-RV, Windows XP, identificare automata a sondei, salvare configuratie | Format imagine: B, B+B, B+M, M, 4B |
| *Format imagine*: B, B+B, B+M, M, 4B | **Sonde**: |
| *Nivele de gri:* 256 | Convexa 4C-RS, 2.0 – 5.0 MHz; |
| *Monitor*: 15 inci LCD color | Lineara LK760-RS, 3.5 – 10.0 MHz. |
| *Procesare imagine*: TGC - 8 segmente, THI, Pre si post procesare imagine | Nivele de gri: 256 Monitor: 15.6" (344.16 x 193.59 mm) high-resolution LCD |
| *Profunzime de scanare*: 40mm.~240mm. | (1920 x 1080 pixels) |
| *Cine memory* 500 cadre | Procesare imagine: 8 TGC pods, THI, Pre si post procesare imagine |
| *Memorie permanenta* 1000 frames, Cine-loop :≥500 frames, HDD 150 G | Profunzime de scanare: 1-33cm. |
| *Zoom* 6 ferestre concomitent si Full screen, in timp real si mod freeze | Cine memory 500 cadre |
| *Focusare electronica* 5 zone cu ajustarea segmentului de focalizare | Memorie permanenta 1000 frames, Cine-loop :≥500 frames, HDD 150 G Zoom |
| *Conversie imagine* Pozitiv/negativ, dreapta/stanga, sus/jos | |
| *Pseudo-color* 10 module | 6 ferestre concomitent si Full screen, in timp real si mod freeze |
| *Masuratori* Distante, Arii, Elipse, Volume, Rata cardiaca, Unghiuri | Focusare electronica: 5 zone cu ajustarea segmentului de focalizare |
| *Personalizare imagine* ID pacient, data, ora, nume, sex, varsta, nume doctor examinator, nume unitate medicala, comentarii, poze, video cine memory | Conversie imagine:Pozitiv/negativ, dreapta/stanga, sus/jos Pseudo-color: 10 module |
| *Pictograme* 60 | Masuratori: Distante, Arii, Elipse, Volume, Rata cardiaca, UnghiuriPersonalizare imagine |
| *Obstetrica-ginecologie* Determinarea termenului gestatiei pe specii de animale | |
| *Ecoghidare* Posibilitate efectuare punctii echoghidate (kit biopsie) | ID pacient, data, ora, nume, sex, varsta, nume doctor examinator, nume unitate medicala, comentarii, poze, video cine memory |
| *Raporturi* Generare raport automat in mod de lucru normal si OB, ecografia generala, abdominala, obstetrica-ginecologie, cardiologie, urologie, miniorgane, ortopedie | Pictograme: 60 |
| *Conectare* PC 2 porturi USB 2,0 | Obstetrica-ginecologie: Determinarea termenului gestatiei pe specii de animale |
| *Iesire* Pal-D, XGA, PS/2, USB 2,0 , DICOM 3,0 | Ecoghidare: Posibilitate efectuare punctii echoghidate (kit biopsie) |
| *Porturi pentru sonde* min 2 buc. | Raporturi: Generare raport automat in mod de lucru normal si OB, ecografia generala, abdominala, obstetrica-ginecologie, cardiologie, urologie, miniorgane, ortopedie |
| *Alimentare* | Conectare PC: 2 porturi USB 2,0 |
| 220V, 50Hz | Iesire: Pal-D, XGA, PS/2, USB 2,0 , DICOM 3,0 |
| | Porturi pentru sonde 3 buc. |
| | Alimentare 220V, 50Hz |

Natalia Chicu

Administrator "Intermed" SRL

# Versana Active™

## Care with Confidence

# INTRODUCING
# Versana Active

Versana Active™ ultrasound system delivers the imaging capability of a console in a hand-carried, lightweight package that enables you to actively take your system to your patients, on premises or remote facilities. This reliable system brings the agility of a laptop unit with capability for attaching to a cart. Adaptable to cover a broad range of everyday GP exams, it is easy to carry to clinics and physician offices.

This high-quality yet affordable unit comes from the GE Healthcare legacy of ultrasound imaging excellence. It combines design, workflow and features developed based on extensive research and testing to meet users' demanding requirements.
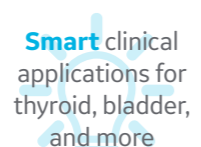
## ADVANCED. CAPABLE. ADAPTABLE.
*World-class ultrasound designed for peace of mind.*

**World-class** image quality

**Durability** for demanding usage day after day

**Smart** clinical applications for thyroid, bladder, and more

Intelligent automated productivity tools including **Whizz** dynamic image tuning

**Scan Assistant** to customize exam protocols

Clinical and product **education***

**Flexible** financing options*

**Expert** service and technical support

**Access** to a network of Versana users

**Versana Active** is part of the Versana ultrasound family: complete solutions that help empower care without compromise, balancing capability, affordability, and reliability.

*\* Local educational offerings and financing options may vary according to regions. Please check with your local GE Healthcare representative.*

# A partner you can trust

*Count on GE Healthcare for equipment and support to help you reach new levels of GP excellence*

## Dependable service and support for peace of mind

GE Healthcare delivers flexible, multi-year coverage to ensure long life, high uptime, efficient patient throughput, strong return on investment.

- Expert service engineers always close by
- Simple maintenance, troubleshooting and repair
- InSite™ service technology for fast remote diagnostics*
- Three-year warranty*

*\* Warranty and remote diagnostic offerings may vary by country or region. Please check with your local GE Healthcare representative.*

## Decades of GE Healthcare heritage at your service

Versana Active links you to vast GE Healthcare ultrasound expertise. It's designed with you, your practice, and your patients in mind to meet your clinical, workflow and connectivity needs.

## Advanced capability in a compact system

Versana Active image quality ranks with the best in its class and persists for the life of the system. High spatial and contrast resolution help you clearly visualize anatomical structures and physiological function, and make confident decisions at the point of care.

Whizz one-touch dynamic image constantly optimizes image quality as you scan, even as you move from one organ or region to another. This world-class yet affordable system also gives you proven functionalities from advanced GE Healthcare systems.
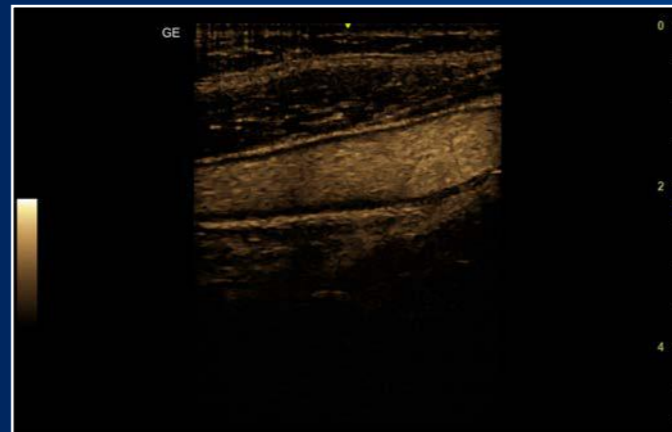
Sensitive B-Flow™ and B-Flow color imaging to analyze blood flow, vessel-wall irregularities and stenosis, and more.

CrossXBeam™ and SRI-HD to define structure borders clearly.

Sensitive color Doppler to examine thyroid vasculature and blood flow in vessels.

# A complete solution
## Advanced applications, educational support, attractive financing

### Adaptable, capable system for comprehensive GP scanning

The light, agile Versana Active makes exams comfortable for you and your patients, in clinic. Scan at bedsides, in space-constrained rooms. Perform abdominal, OB/GYN, cardiac, MSK and vascular exams, and more – plus needle-guidance procedures. This highly adaptable system lets you add a cart to create a full-featured console system and suit your practice needs. Fast boot-up lets you place the system in standby, then instantly scan the next patient who needs imaging. Advanced clinical applications and automated tools simplify exams, streamline workflow, and enable fast, high-volume scanning.

Use a **Thyroid Productivity Tool** for structure characterization and TI-RADS assessment

Use **Scan Coach** 3D animation, anatomic illustrations and reference images to find the correct scan plane

Measure intima-media thickness with **Auto-IMT**

View fetal details with **3D imaging**; take fetal measurements with **SonoBiometry**

Use **Auto Bladder** to easily calculate volumes, including residual urine volume

**Upload images and reports** to the cloud for consultation or sharing with patients

Create custom exam protocols and standardized workflow with **Scan Assistant**

Simplify exams and measure structures detected with a **Breast Productivity Tool**

Use the **Follow-Up Tool** to easily compare current and prior images

Use **templates** to create custom reports to suit global or regional standards

Easily add **voice comments** to exams

### Flexible financing to enhance return on investment

Financing plans including monthly payments help you meet financial goals and grow your practice.

### CHECK OUT THESE CONVENIENT FEATURES

**Wide range of probe offerings**

**High durability**

**Convenient carrying handle**

**Cart option to suit scanning preferences**

**Light** (5 kg/11 lb) and **slim** (57 mm/2.3 in)

### Sharpen your skills and stay ahead of the curve

- Training and ultrasound education solutions including product and clinical tutorials
- My Trainer on-board help with system care, setup and operation
- Local face-to-face training and remote application support

*Cloud access requires internet connection. Financing options and educational offerings vary from country to country. Please check with your local GE Healthcare representative.*

# An opportunity for growth

*Ultrasound to serve you well today and set your course for the future*

## Experience the strength of the GE Healthcare family

Your support team is fully trained, GE Healthcare qualified, deeply experienced, and nearby.

- Expert support during and after purchase
- In-depth staff instruction
- Remote or on-site technical, clinical and network support

## Customized solutions and path to growth

Versana Active can scale to suit your general practice today and grow with you. Select a basic system and software. Then choose from optional upgrades as your practice advances. When ready, migrate to a more specialized GE ultrasound system.

## Versana Club: Learn. Network. Share.

The Versana Club community offers resources to help you expand your ultrasound knowledge and improve your practice.

- Educational offerings
- Web-based video tutorials
- Information on Versana family service solutions and products
- Up-to-date content on ultrasound and patient care
- Notices of regional ultrasound events and other news
- Access to the broader family of GE Healthcare ultrasound user clubs

Register now at www.versanaclub.net.

### VERSANA ACTIVE: CARE WITH CONFIDENCE
*Advanced. Capable. Adaptable. World-class ultrasound designed for peace of mind.*

Imagination at work

August 2019
JB68539XX

# Versana Active

## R1.5

## Ultrasound System

Specification sheet

February 14, 2020

Rev. 1

### Product description

Versana Active™ R1.5 ultrasound system delivers the imaging capability of a console in a hand-carried, lightweight package that enables you to actively take your system to your patients, on premises or remote facilities. This reliable system brings the agility of a laptop unit with capability for attaching it to a cart. Adaptable to cover a broad range of everyday exams, it is easy to carry to clinics and physician offices.

# Contents

# 1. General specifications

| 1.01 Dimensions and weight | |
|---|---|
| Height | 58 mm |
| Width | 390 mm |
| Length | 362 mm |
| Weight (no Peripherals) | 5.0 kg with battery |

| 1.02 Electrical power |
|---|
| Voltage: 100 – 240 VAC |
| Frequency: 50/60 Hz |

| Power consumption | • No more than 200 VA with peripherals<br>• No more than 450 VA with peripherals (with advanced cart) |
|---|---|

| 1.03 Console design |
|---|
| 1 in built active probe ports |
| Integrated SSD (256 GB standard)/(1T option) |
| Integrated speakers |

# 2. User interface

| 2.01 Operator keyboard |
|---|
| Full alphanumeric keypad covered with washable protection film |
| 8 TGC pods |

| 2.02 Monitor |
|---|
| 15.6" (344.16 x 193.59 mm) high-resolution LCD (1920 x 1080 pixels) |
| Brightness/contrast/color temperature adjustment |

# 3. System overview

| 3.01 Applications |
|---|
| Abdominal |
| Obstetrical |
| Gynecological |
| Small parts |
| Musculoskeletal |
| Vascular/peripheral vascular |
| Urological |
| Pediatric |

| Applications *(cont.)* |
|---|
| Cardiac |
| Thoracic |
| Transcranial |
| Transvaginal |
| Transrectal |

| 3.02 Scanning methods |
|---|
| Electronic convex |
| Electronic linear |
| Electronic micro convex |
| Electronic sector |
| Mechanical volume sweep |

| 3.03 Transducer type |
|---|
| Convex array |
| Linear array |
| Microconvex array |
| Sector phased array |
| Volume Probe(4D) |

| 3.04 Operating modes |
|---|
| B-Mode |
| Coded Harmonic Imaging |
| M-Mode |
| Anatomical M-Mode (option) |
| Curved AMM (option) |
| Color M-Mode |
| Color Flow mode (CFM) |
| Power Doppler Imaging (PDI) |
| Directional PDI |
| B-Flow™ (B-Flow Color) (option) |
| PW Doppler with high PRF |
| CW Doppler mode (option) |
| Contrast agency detection (option) |
| TVI mode (option) |
| Elastography (option) |
| 3D/4D volume modes (option) |

# 4. System standard features

Installation wizard

Whizz

CrossXBeam™

SRI-HD (High Definition Speckle Reduction Imaging)

B-Steer

Coded Phase Inversion Harmonic Imaging

Virtual Convex

Patient information database

Image Archive on integrated HDD

Raw Data Analysis

Voice comments

Real-time automatic Doppler calculations

OB Calculations

Fetal Trending

Multi-gestational calculations

Hip dysplasia calculations

Gynecological calculations

Vascular calculations

Breast Productivity

Urological calculations

Renal calculations

Cardiac calculations

On-board reporting package

MPEGvue

Network storage

Remote capability: RSvP

My Trainer

Scan Assistant

Standby

QAnalysis

# 5. System options

CW Doppler

Anatomical M-Mode

Curved AMM

LOGIQ View

# 5. System options *(cont.)*

Advanced 3D (Easy 3D)

B-Flow (B-Flow color)

Tissue Velocity Imaging (TVI)

TVM

Auto Bladder (Dynamic image optimization, Auto measurement and Auto annotation)

Stress Echo

Scan Coach

Auto EF

Sono Biometry

Auto IMT

Breast Care

| Thyroid productivity | A package in thyroid measurement with including measurement and relevant description (Includes TI-RADS ACR) |
|---|---|

Needle recognition

Follow-up tool

DICOM® 3.0 Connectivity

Tricefy™ Uplink

Contrast agency detection

Elastography

Static 3D/Real-time 4D: TUI

# 6. Peripheral Options

Sony UP-D898MD B/W thermal printer

Sony UP-D25MD Color thermal printer

Sony UP-D898DC B/W thermal printer

1-pedal and 3-pedal type footswitch

USB stick

External USB HDD

DVD RW kit

USB Wireless adaptor: sales availability varies in different countries

ECG Module

HP Office 200 printer

Bluetooth adapter

# 7. Display modes

| 7.01 Live and stored display format | |
|---|---|
| Widescreen | • Full size and split screen<br>• Both with thumbnails for still and Cine |
| Review image format | 4x4 and thumbnails for still and Cine |
| Simultaneous capability | • Dual B (B/B)<br>• B + CFM/PDI<br>• B + PW/M<br>• B + CFM + M<br>• Real-time triplex mode (B + CFM/PDI+PW)<br>• B + B-Flow/B-Flow Color |
| Zoom | Write (HD)/read 67X |
| Colorized Image | • Colorized B<br>• Colorized B-Flow<br>• Colorized M<br>• Colorized PW<br>• Colorized CW<br>• Colorized 3D |
| Timeline display | • Independent dual B/PW or CW display<br>• Display Format<br>  – Top/bottom selectable format (Size: 1/2:1/2; 1/3:2/3; 2/3:1/3)<br>  – Side/side selectable format (Size: 1/2:1/2; 1/4:3/4; TL only) |
| Others | • Virtual Convex<br>• LOGIQ View<br>• TUI (Tomography Ultrasound Imaging) |

# 8. Selectable alternating modes

| |
|---|
| B/M/PW/CW/CF/PDI/TVI/TVD |
| B + B |
| B + M |
| B + PW/CW |
| B + CFM/PDI |
| B + CFM/PDI + PW/CW |
| B + TVI |
| B + TVI + TVD |
| Multi-image split screen (quad screen) |
| Live/Frozen |
| Independent CINE playback |

# 9. Display annotation

| 9.01 General user interface | | |
|---|---|---|
| Patient name: First, last (up to 64 total characters) | | |
| Patient ID (Up to 64 characters) | | |
| Other ID (Up to 64 characters) | | |
| Age, gender and date of birth | | |
| Hospital name | | |
| Date format:<br>3 types selectable | • MM/DD/YYYY<br>• YYYY/MM/DD | • DD/MM/YYYY |
| Time format:<br>2 types selectable | • 24 hours<br>• 12 hours | |
| Gestational age from | • LMP<br>• EDD | • GA<br>• BBT |
| Displayed Acoustic Output | • TIs: Thermal Index Soft Tissue<br>• TIc: Thermal Index Cranial (Bone)<br>• TIb: Thermal Index Bone<br>• MI: Mechanical Index | |
| % of maximum power output | | |
| Probe name | | |
| Map name | | |
| Probe orientation | | |
| Depth scale marker | | |
| Lateral scale marker | | |
| Focal zone marker | | |
| Image depth | | |
| Zoom depth | | |

| 9.02 B-Mode |
|---|
| Gain |
| Dynamic range |
| Imaging frequency |
| Edge enhance |
| Frame average |
| Frame rate |
| Gray map |
| SRI-HD |
| CrossXBeam |

# 9. Display annotation *(cont.)*

## 9.03 Color Flow Mode

Line density

Frame average

Packet size

Color velocity range and baseline

Color threshold marker

Color gain

Inversion

Frequency

## 9.04 PDI Mode

Line density

Frame average

Packet size

Directional PDI

Color velocity range and baseline

Power threshold marker

PDI Gain

Inversion

## 9.05 B-Flow/B-Flow Color Mode

Gain

Background

SRI HD

Accumulation

Flow Type/Model

Rejection

Colorize

Edge Enhance

Gray Map

Frame Average

Power Output

Sensitivity/PRI

Dynamic Range

Frequency

Suppression

Flash Suppression

## 9.05 B-Flow/B-Flow Color Mode *(cont.)*

Enhance

Threshold

Map Compress

Map

Wall Filter

Transparency

## 9.06 M-Mode

Gain

Dynamic Range (Use the Dynamic Range of B-Mode)

Time Scale

AMM

## 9.07 Doppler Mode

Gain

Angle Correct

Sample Volume Depth and Sample Volume Length

Wall Filter

Velocity and/or Frequency Scale

Spectrum Inversion

Time Scale

Scale

Doppler Frequency

## 9.08 Elastography

Frequency

Soft Compress

Hard Compress

Scale

## 9.09 Contrast

Visualization

Contrast Clock1

Contrast Clock2

Contrast Only

Dual View

# 9. Display annotation *(cont.)*

## 9.09 Contrast *(cont.)*

Trigger Off

Time Delay

Dynamic Range

Frequency

SRI HD

Colorize

Gray Map

Frame Average

Line Density

Accumulation

Hybrid Map

Visualization

Flash

Contrast Tech

Max Enhance

Contrast Only

Target MI

## 9.10 Easy 3D

Utilities

Texture

Gray Surface

Render

Threshold1

Threshold2

Scan Distance

Colorize

## 9.11 Advanced 3D

DefineAxis

Group Planes

Reslice

Tile

## 9.12 3D/4D

Tile/Mix

Active Curve

Reset Curve

Lower Threshold

Volume Angle

B Quality

3D Orient

Render Mode

Colorize

Direction

Rend 1 Gray

Rend 2 Gray

Adv. Rend

Transparency

Ref Image

Cut Mode

Cut Depth

Depth

Rotational Angle

Step Angle

Rotation Axis

Start Angle

End Angle

Loop Speed

# 10. General system parameters

## 10.01 System setup

| | |
|---|---|
| 10 Pre-programmable Categories | |
| User Programmable Preset Capability | |
| Factory Default Preset Data | |
| Languages | English, Latin American Spanish, French, German, Italian, Brazilian Portuguese, Chinese (simplified), Swedish, Russian, Norwegian, Danish, Dutch, Finnish |
| OB Report Formats | |
| Tokyo Univ., Osaka Univ., USA, Europe, and ASUM | |
| User defined annotations | |
| Body patterns | |

## 10.02 System scanning parameters

Digital Agile Beamformer Architecture

223907 system processing channels

Max. Frame Rate: 1790 fps, probe dependent and modes

Displayed Imaging Depth: 1 – 33 cm

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

Maximum Depth of Field: 0 – 33 cm, probe dependent

Transmission Focus: 1 – 8 Focal Points selectable, probe dependent and application

Quad Beamforming

Continuous Dynamic Receive Focus/Aperture

Multi-Frequency/Wideband Technology

Frequency Range: 1.7 to 18 MHz

256 Shades of Gray

269 dB systematic Dynamic Range

Adjustable Field of View (FOV): up to 168 degree, probe dependent

Image Reverse: Right/Left

Image Rotation of 0° 90°180° 270°

## 10.03 B-Mode

| | |
|---|---|
| Acoustic power output | 0 – 100%, 2, 5 and 10 steps |
| Gain | From 0 – 90 dB, 1 dB per step |
| Adjustable dynamic range | 36 – 96 dB, 3 or 6 dB per step |
| Frame averaging | 8 steps |
| Gray scale map | 6 or 8 types, probe and application dependent |
| B colorization | 9 types |
| Frequency | Up to 4 selectable, probe dependent |
| Line density | 5 – 7 steps, probe dependent |
| Line density zoom | 5 – 7 steps, probe dependent |
| Thermal index | TIC, TIS, TIB |
| Image reverse | On/off |
| Focus number | 8 steps |
| Focus width | 3 types |
| Suppression | 6 steps |
| Edge enhance | 7 steps |
| Rejection | 6 steps |
| Steered linear | ±12°, ±15°, probe dependent |
| Scanning size (FOV or angle, probe dependent) | |
| SRI-HD | Up to 8 levels selectable |
| CrossXBeam | Up to 9 angles selectable, probe dependent |
| Depth | 1 – 33 cm, 0.5,1 or 2 cm per step, probe dependent |

## 10.04 Coded Harmonic Imaging

| | |
|---|---|
| Coded Phase Inversion Harmonic Imaging | |
| Available on all probes | |
| Line density | 5 or 6 steps, probe dependent |
| Line density zoom | 5 or 6 steps, probe dependent |
| Suppression | 6 steps |
| Edge enhance | 7 steps |
| Gray scale map | 6 or 8 types, probe and application dependent |
| Tint map | 9 types |

# 10. General system parameters
*(cont.)*

## 10.04 Coded Harmonic Imaging *(cont.)*

| | |
|---|---|
| Gain | 0 – 90 dB, 1 dB per step |
| Dynamic range | 51 – 78 dB, 3 dB per step;<br>36 – 48 dB/78 – 96 dB, 6 dB per step; |
| Rejection | 6 steps |
| Frequency | Up to 4 steps, probe dependent |

## 10.05 SRI-HD

High Definition Speckle Reduction Imaging Provides multiple levels of speckle reduction

Compatible with side-by-side DualView display

Compatible with all linear, convex and sector transducers

Compatible with B-Mode, 3D/4D imaging

## 10.06 CrossXBeam

Provides 3, 5, 7, 9 of spatial compounding

Live side-by-side DualView display

| | |
|---|---|
| Compatible with | • Color Mode • PW<br>• SRI-HD • Coded Harmonic<br>• Virtual Convex   Imaging |

Available on 4C-RS, L6-12-RS, E8C-RS, E8Cs-RS, 8C-RS, RAB2-6-RS, L8-18i-RS, 9L-RS, 12L-RS, LK760-RS

## 10.07 Color Flow Mode

| | |
|---|---|
| Baseline | 0 – 100%, 10% per step |
| Invert | Off/on |
| CF/PDI focus depth | Default pre-settable for 10 – 100% of ROI in depth, 15% or 20% per step |
| CF/PDI flash suppression | 5 steps |
| CF/PDI angle steer | 0, ±10˚, ±15˚, ±20˚, probe dependent |
| Packet size | 8 – 24, probe and application dependent |
| Line density | 5 steps |
| Line density zoom | 5 steps |
| Frame average | 7 steps |
| PRF | 0.1 – 27.2  KHz |
| Spatial filter | 6 steps |
| Gain | 0 – 40 dB, 0.5 dB per step |

## 10.07 Color Flow Mode *(cont.)*

| | |
|---|---|
| Wall filter | 4 steps, probe and application dependent |
| Scanning size (FOV or angle) | Probe dependent |
| CF/PDI vertical size (mm) of ROI | Default pre-settable |
| CF/PDI center depth (mm) of ROI | Default pre-settable |
| CF/PDI frequency | Up to 5 steps, probe dependent |
| Color maps, including velocity-variance maps | 20 types, probe and application dependent |
| Transparent map | 5 steps |
| Color threshold | 0 – 100%, 10% per step |
| Accumulation | 8 steps |

## 10.08 Power Doppler Imaging Mode

| | |
|---|---|
| PDI map | 14 types |
| CF/PDI focus depth | Default pre-settable for 10 – 100% of ROI in depth, 15% or 20% per step |
| CF/PDI acoustic output | 0 – 100%, 2%, 5% or 10% per step |
| CF/PDI angle steer | 0, ±10˚, ±15˚, ±20˚, probe dependent |
| Packet size | 8 – 24, probe and application dependent |
| Spatial filter | 6 steps |
| Frame average | 7 steps |
| PRF | 0.1 – 26 KHz |
| Power threshold | 0 – 100%, 10% per step |
| Gain | 0 – 40 dB, 0.5 dB per step |
| Wall filter | 4 steps, probe and application dependent |
| CF/PDI frequency | Up to 5 steps, probe dependent |
| Transparent map | 5 steps |
| Invert | On/off |
| Accumulation | 8 steps |

# 10. General system parameters
*(cont.)*

## 10.09 M-Mode

| | |
|---|---|
| Gain | -20 – 20 dB, 1 dB per step |
| Gray scale map | 6 or 8 types, probe dependent |
| Colorization | 9 types |
| Scanning size (FOV or angle, probe dependent, see probe specifications) | |
| Rejection | 6 steps |
| Compression | 13 steps |
| Sweep Speed | 8 steps |
| M/PW display format | Vert 1/3B, Vert 1/2B, Vert 2/3B, Horiz 1/2B, Horiz 1/4B, TL only |

## 10.10 Anatomical M-Mode (option)

M-Mode cursor adjustable at any plane

Can be activated from a Cine loop from a live or stored image

Measure and analysis capability

Available with Color Flow mode

Curved AMM

## 10.11 Pulse Wave Doppler Mode

| | |
|---|---|
| Acoustic power | 0 – 100%, 2, 5 and 10 steps |
| Gain | 0 – 85 dB, 1 dB per step |
| Gray scale map | Up to 8 types |
| PRF | 0.3 – 27.9 KHz |
| Transmit frequency | 1.7 – 10 MHz, probe dependent |
| Wall filter | 5.5 – 5000 Hz, 27 steps, probe dependent |
| PW colorization | Up to 6 types |
| Velocity scale range | 0.1 – 7011 cm/s |
| Sample volume depth | 0.1 – 33 cm, probe dependent |
| Sweep speed | 0 – 7, 8 steps |
| SV gate | 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16 mm |
| Angle correction | -90˚ – 90˚, 1˚ per step |
| M/PW display format | Vert 1/3B, Vert 1/2B, Vert 2/3B, Horiz 1/2B, Horiz 1/4B, TL only |
| Spectrum inversion | Off/on |
| Simultaneous | Off (PW only)/on |

## 10.11 Pulse Wave Doppler Mode *(cont.)*

| | |
|---|---|
| PW angle steer | 0, ±10˚, ±15˚, ±20˚ (use angle steer of B-Mode), probe dependent |
| Trace method | Off, Max, Mean |
| Baseline shift | 11 steps |
| Auto Calcs/Doppler Auto Trace | Off, Frozen, Live |
| Compression | 0.5 – 2.4 (0.5, 0.7, 0.9, 1, 1.1, 1.4, 1.6, 2, 2.4) |
| Trace direction | Above, below, both |
| Trace sensitivity | 0 – 40, 2 per step |

## 10.12 Continues Wave Doppler Mode

| | |
|---|---|
| Gray scale map | 8 types |
| Baseline | 11 steps |
| Angle correct | -90˚ – 90˚, 1˚ per step |
| Spectral color | 6 types |
| Invert | Off/on |
| Cycles to average/ Spectral averaging | 5 steps |
| Gain | 0 – 85 dB, 1 dB per step |
| Wall filter | 5.5 – 5000 Hz, 27 steps, dependent on probe and application |
| CW-Mode includes | • Transmit frequency: 1.9, 4.2, 5.0, 6.2 MHz<br>• CW colorization: tint map A/B/C/D/E/F<br>• Velocity scale range: 0.2 – 6105 cm/s<br>• Spectrum inversion: On, off<br>  Trace method: Max, mean, off<br>• Auto Calcs/Doppler Auto Trace: Frozen, live, off<br>• Trace direction: Above, below, both |

Trace sensitivity: 0 – 40, 2 per step

## 10.13 Cine memory/image memory

384 MB of Cine memory

Selectable Cine sequence for Cine review

Prospective Cine mark

Measurements/calculations and annotations on Cine playback

Scrolling timeline memory

Dual image Cine display

Quad image Cine display

# 10. General system parameters
## *(cont.)*

## 10.13 Cine memory/image memory *(cont.)*

Cine gauge and Cine image number display

Cine review loop

| Cine review speed | 11 steps (11, 13, 14, 17, 22, 25, 31, 48, 100, 200, 400%) |
|---|---|

## 10.14 Image storage

On-board database of patient information

| Conversion to formats | JPEG, AVI, WMV |
|---|---|

Live image and stored image side-by-side display

Reload of archived data sets

Network storage support for Import, Export, DICOM Read, SaveAs, MPEGvue

| Storage formats | • DICOM – compressed/uncompressed, single/multi-frame, with/without Raw Data<br>• Export JPEG, WMV (MPEG 4) and AVI formats<br>• DICOM still image storage size: ~3.9 MB<br>• Display format: full size, 4x4 and thumbnails |
|---|---|
| Storage devices | • Internal hard drive partition of 100 GB (256 GB Console), and 814 GB (1 TB Console option) for image storage<br>• External USB HDD and USB memory stick support for Import, Export, DICOM Read, SaveAs, and MPEGvue<br>• CD-RW storage: 700 MB<br>• DVD storage: -R (4.7 GB) |

## 10.15 Connectivity and DICOM

| Ethernet network connection | • DICOM 3.0 (option)<br>• Verify<br>• Print<br>• Store<br>• Modality worklist<br>• Storage commitment<br>• Modality Performed Procedure Step (MPPS)<br>• Query/retrieve<br>• Structured reporting template (can be compared to vascular and OB standard)<br>• Remote capability InSite™ Exc |
|---|---|

## 10.16 Virtual convex

Provides a convex field of view

Compatible with CrossXBeam for linear transducers

Available on linear and sector transducers

## 10.17 LOGIQView (option)

Extended Field of View Imaging

Available on 4C-RS, L6-12-RS, 8C-RS, 3Sc-RS, E8C-RS, E8Cs-RS, L8-18i-RS, 6S-RS, LK760-RS, 12L-RS, 9L-RS, 12S-RS, RAB2-6-RS probes

For use in B-Mode

CrossXBeam is available on linear probes

Auto detection of scan direction

Post-process zoom

Rotation

Auto fit on monitor

Measurements in B-Mode

Up to 60 cm scan length

## 10.18 Easy 3D (option)

Allows unlimited rotation and planar translations

3D reconstruction from Cine sweep

Utilities: Average off/Average light/Average medium/ Average strong

Gray surface: Off/on

Threshold1: 0 – 255

Threshold2: 0 – 255

Scan distance: 1.0 – 15.0

Colorize: 0 – 360

## 10.19 Advanced 3D (option)

Define axis: Select 2 points as start and end point of long axis

Group planes: Off/Main/Parallel/Angular

Reslice: Cube/Virtual Rescan/Cubic Plane

Tile: 1/2/4/6

# 10. General system parameters
*(cont.)*

## 10.20 Static 3D/Real-time 4D (option)

Available on RAB2-6-RS

| Acquisition modes | •Static 3D      • Real-time 4D |
|---|---|
| Visualization modes | • 3D rendering (diverse surface and intensity projection modes)<br>• Sectional planes (3 section planes perpendicular to each other)<br>• TUI |
| Render Mode | Surface Texture, Surface Smooth, Transp. Max, Transp. Min, Transp. X-ray, Mix Mode of two render modes |
| Display format | • Quad: A-/B-/ C-Plane/3D<br>• Dual: A-Plane/3D<br>• Single: 3D |

Curved 3-point render start

| 3D Movie | • Loop Speed: 6 – 400<br>• Run/stop<br>• Scalpel: 3D cut tool<br>• Cut mode: Inside Contour/Outside Contour/Inside Box/Outside Box/ Small Eraser/Big Eraser<br>• Cut depth: Full/User Defined<br>• Depth: 0 – 1000<br>• 3D rotation Cine<br>• Rotational angle: 30 – 360°<br>• Step angle: 1 – 15°<br>• Rotation axis: X/Y<br>• 3D volume review<br>• Start frame: Define start frame<br>• End frame: Define end frame |
|---|---|
| TUI: Tomographic Ultrasound Imaging | • Display format: 1x1/1x2/2x2/3x3<br>• Slices: 3 – 19<br>• Slices distance: 0.5 – 40 mm |
| Real-time 4D | • 4D Volume Cine<br>• LoopSpeed:6-400<br>• Run/Stop |

## 10.21 Elastography (option)

Available on L6-12-RS, 9L-RS, 12L-RS

| Semi-quantification | • Frame reject: 0 – 8<br>• Axial smoothing: 0 – 4<br>• Noise reject: 0 – 8<br>• Sample Volume: 0 – 4, probe dependent<br>• Lateral smoothing: 0 – 4<br>• Window: 0 – 8<br>• Map: 8<br>• Frame average: 0 – 10<br>• Line Density: 0 – 4<br>• Soft compress: 0 – 10<br>• Hard compress: 0 – 10 |
|---|---|

## 10.22 Contrast agency detection (option)

| Available on 4C | • Line density: 0 – 4<br>• SRI HD: 0 – 2<br>• Suppression: 0 – 5<br>• Frame average: 0 – 7<br>• Dynamic range: 36 – 96 dB<br>• Rotation: Up/down<br>• Modes/Frequency: Pen (Penetration), Gen (General) and Pes (Resolution) and<br>• Display tissue image and contrast-enhanced image simultaneously in split screen<br>• 2 contrast timers<br>• Time delay: 0.3 – 10 seconds<br>• Accumulation mode: 8 steps<br>• Max Enhance: On/Off<br>• Gray map: 10 types |
|---|---|

## 10.23 B-Flow (option)

Available on 4C-RS, L6-12-RS, 12L-RS, 9L-RS

| Background | On/off |
|---|---|
| Sensitivity/PRI | 1 – 50, 17 steps |
| Line density | 5 steps |
| Edge enhance | 7 steps |
| Frame average | 0 – 7, 8 steps |
| Gray scale map | 8 maps |
| Tint map | 5 maps |
| Dynamic range | 36 – 96 dB, 16 steps |
| Rejection | 6 steps |
| Gain | 0 – 90 dB range, 1 dB per step |
| B-Flow Color | |
| Accumulation | 8 levels |

# 10. General system parameters
*(cont.)*

## 10.24 TVI (option)

Myocardial Doppler imaging with color overlay on tissue image

Available on the sector probes

Tissue color overlay can be removed to show just the 2D image, still retaining the tissue velocity information

QAnalysis: Multiple Time Motion trace display from selected points in the myocardium

## 10.25 TVM (option)

TVI with M-Mode active

Available on the sector probes

Provides both myocardium motion velocity and direction

## 10.26 Stress Echo (option)

| | |
|---|---|
| Advanced and flexible stress echo examination capabilities | • Provides exercise and pharmacological protocol templates<br>• 8 default templates<br>• Template editor for user configuration of existing templates or creation of new templates<br>• Reference scan display during acquisition for stress level |
| Comparison (dual screen) | • Baseline level/Previous level selectable<br>• Raw data continuous capture<br>• Over 87.5 seconds available<br>• Wall motion scoring (bulls eye and segmental)<br>• Smart stress: Automatically set up various scanning parameters (geometry, frequency, gain, etc.) according to same projection on previous level |

## 10.27 Follow-up tool (option)

The follow-up tool is intended to more accurately perform serial scans on a patient, and compare the images of a previous ultrasound exam with the current exam.

## 10.28 Breast care (option)

Breast care is a customizable workflow designed for breast scanning. With its guiding, user can complete various modes of imaging, measurement, lesion BI-RADS® classification, and find positive area efficiently. That's an easy reference in the device when patient is in subsequent visit.

## 10.29 Needle recognition (option)

Needle recognition allows you to obtain precise needle imaging in the dashed box. It is available with probes on L6-12-RS,12L-RS, 4C-RS, 9L-RS.

## 10.30 Scan Coach (option)

| | |
|---|---|
| Scan Coach is a contextual reference tool. It is with clinical guidance for scan plane acquisition and references for anatomical structures. It can be displayed on-demand by the user. Clinical reference images & animations to depict information related to each step. It covers five applications. | • Abdomen<br>• Obstetrics<br>• Gynecology<br>• Cardiology<br>• Vascular |

## 10.31 MyTrainer

Abstracted from basic user manual, it lists out FAQs from customers and instructs customer how to solve problems by themselves timely.

## 10.32 Battery (option)

The lithium ion battery provides power when an AC power source is not available.

## 10.33 Scan Assistant

Scan Assistant provides an automated exam script that moves you through an exam step-by-step. This allows you to focus on performing the exam rather than on controlling the system and can help you to increase consistency while reducing keystrokes.

## 10.34 InSite Exc

InSite Exc is a direct link with a GE Online Service Engineer, Applications Support Engineer or a Request for Service.

## 10.35 Whizz

Whizz will continuously optimize the brightness, contrast and uniformity of B-Mode images when scanning different tissues. Whizz in PW/CW Doppler Mode optimizes the spectral data. Auto adjusts the Velocity Scale/PRF (live imaging only), baseline shift, and invert (if preset). Upon deactivation, the spectrum is still optimized.

# 10. General system parameters
*(cont.)*

| 10.36 Controls available while "live" | |
|---|---|
| Write Zoom | |
| B/M-Mode | • Gain<br>• TGC<br>• Dynamic Range<br>• Acoustic Output<br>• Transmission Focus Position<br>• Transmission Focus Number<br>• Line Density Control<br>• Sweep Speed for M-Mode<br>• Number of Angles for CrossXBeam |
| PW-Mode | • Gain<br>• Acoustic Output<br>• Transmission Frequency<br>• Scale<br>• Wall Filter<br>• Sample Volume Gate<br>  – Length<br>  – Depth<br>• Volume |
| Color Flow Mode | • CFM Gain<br>• CFM Velocity Range<br>• Acoustic Output<br>• Wall Filter<br>• Packet Size<br>• Line Density<br>• CFM Spatial Filter<br>• CFM Frame Average<br>• Frequency/Velocity Baseline Shift |

| 10.37 Controls available on Freeze or Recall |
|---|
| SRI-HD |
| CrossXBeam – Display non-compounded and compounded image simultaneously in split screen |
| Easy 3D reconstruction from a stored Cine loop |
| CrossXBeam is disabled on Freeze or Recall |
| TGC |
| Colorized B and M |
| Frame average (loops only) |
| Dynamic range |
| Anatomical M-Mode |
| Gray Map |
| Post gain |
| Baseline shift (PW, CW) |
| Sweep speed |

| 10.37 Controls available on Freeze or Recall *(cont.)* |
|---|
| Compression |
| Rejection |
| Colorized spectrum |
| Display format |
| Angle Correct |
| Quick Angle Correct |
| Overall gain (loops and stills) |
| Color map |
| Transparency map |
| CFM display threshold |
| Invert for Color/Doppler |

# 11. Measurements/calculations

| 11.01 General B-Mode |
|---|
| Depth and distance |
| Circumference (ellipse/trace) |
| Area (ellipse/trace) |
| Volume (ellipsoid) |
| % Stenosis (area or diameter) |
| Angle between 2 lines |

| 11.02 General M-Mode |
|---|
| Depth |
| Distance |
| Time |
| Slope |
| Heart rate |

| 11.03 General Doppler measurements/calculations |
|---|
| Velocity |
| Time |
| A/B ratio (velocities) |
| PS (Peak Systole) |
| ED (End Diastole) |

# 11. Measurements/calculations
### *(cont.)*

## 11.03 General Doppler measurements/calculations *(cont.)*

PS/ED (PS/ED ratio)

ED/PS (ED/PS ratio)

AT (Acceleration Time)

ACCEL (Acceleration)

TAMAX (Time Averaged Maximum Velocity)

Volume Flow (TAMEAN and vessel area)

Heart Rate

PI (Pulsatility Index)

RI (Resistivity Index)

## 11.04 Real-time Doppler auto measurements/calculations

PS (Peak Systole)

ED (End Diastole)

MD (Minimum Diastole)

PI (Pulsatility Index)

RI (Resistivity Index)

AT (Acceleration Time)

ACC (Acceleration)

PS/ED (PS/ED Ratio)

ED/PS (ED/PS Ratio)

HR (Heart Rate)

TAMAX (Time Averaged Maximum Velocity)

PVAL (Peak Velocity Value)

Volume Flow (TAMEAN and Vessel Area)

## 11.05 OB measurements/calculations

| Gestational age by | • GS (Gestational Sac)<br>• CRL (Crown Rump Length)<br>• FL (Femur Length)<br>• BPD (Biparietal Diameter)<br>• AC (Abdominal Circumference)<br>• HC (Head Circumference)<br>• APTD x TTD (Anterior/Posterior Trunk Diameter by Transverse Trunk Diameter) |
|---|---|
| Trunk Diameter | • FTA (Fetal Trunk Cross-sectional Area)<br>• HL (Humerus Length)<br>• BD (Binocular Distance)<br>• FT (Foot Length)<br>• OFD (Occipital Frontal Diameter) |

## 11.05 OB measurements/calculations *(cont.)*

| Trunk Diameter *(cont.)* | • TAD (Transverse Abdominal Diameter)<br>• TCD (Transverse Cerebellum Diameter)<br>• THD (Thorax Transverse Diameter)<br>• TIB (Tibia Length)<br>• ULNA (Ulna Length) | |
|---|---|---|
| Estimated Fetal Weight (EFW) by | • AC, BPD<br>• AC, FL, HC | • AC, BPD, FL, HC |
| Calculations and ratios | • FL/BPD<br>• CI (Cephalic Index)<br>• FL/HC | • CTAR (Cardio-Thoracic Area Ratio) |
| SonoBiometery | • BPD<br>• AC<br>• FL | • HC<br>• HL |

Measurements/calculations by: ASUM, ASUM 2001, Berkowitz, Bertagnoli, Brenner, Campbell, CFEF, Chitty, Eik-Nes, Ericksen, Goldstein, Hadlock, Hansmann, Hellman, Hill, Hohler, Jeanty, JSUM, Kurtz, Mayden, Mercer, Merz, Moore, Nelson, Osaka University, Paris, Rempen, Robinson, Shepard, Shepard/Warsoff, Tokyo University, Tokyo/Shinozuka, Yarkoni

Fetal graphical trending

Growth percentiles

Multi-gestational calculations

Fetal qualitative description (anatomical survey)

Fetal Environmental Description (Biophysical profile)

Programmable OB tables

Over 20 selectable OB calculations

Expanded worksheets

## 11.06 GYN measurements/calculations

Right ovary length, width, height

Left ovary length, width, height

Uterus length, width, height

Cervix length, trace

Ovarian volume

ENDO (Endometrial thickness)

Ovarian RI

Uterine RI

Follicular measurements

# 11. Measurements/calculations
## *(cont.)*

| 11.07 Vascular measurements/calculations |
| --- |
| DCCA (Distal Common Carotid Artery) |
| MCCA (Mid Common Carotid Artery) |
| PCCA (Proximal Common Carotid Artery) |
| DICA (Distal Internal Carotid Artery) |
| MICA (Mid Internal Carotid Artery) |
| PICA (Proximal Internal Carotid Artery) |
| DECA (Distal External Carotid Artery) |
| PECA (Proximal External Carotid Artery) |
| VERT (Vertebral Velocity) |
| SUBCLAV (Systolic Subclavian Velocity) |
| Automatic IMT |

| 11.08 Urological calculations |
| --- |
| Volume (Auto bladder volume) |
| Prostate volume |
| Left/right renal volume |
| Generic volume |
| Post-void bladder volume |

# 12. Cardiac measurements/ calculations

| 12.01 B-Mode measurements | |
| --- | --- |
| Aorta | • Aortic Root Diameter (Ao Root Diam)<br>• Aortic Arch Diameter (Ao Arch Diam)<br>• Ascending Aortic Diameter (Ao Asc)<br>• Descending Aortic Diameter (Ao Desc Diam)<br>• Aorta Isthmus (Ao Isthmus)<br>• Aorta (Ao st junct) |
| Aortic valve | • Aortic Valve Cusp Separation (AVCusp)<br>• Aortic Valve Area Planimetry (AVA Planimetry)<br>• (Trans AVA) |
| Left atrium | • Left Atrium Diameter (LA Diam)<br>• LA Length (LA Major)<br>• LA Width (LA Minor)<br>• Left Atrium Area (LAA(d), LAA(s))<br>• Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C) |

| 12.01 B-Mode measurements *(cont.)* | |
| --- | --- |
| Left ventricle | • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds)<br>• Left Ventricle Internal Diameter (LVIDd, LVI Ds)<br>• Left Ventricle Length (LVLd, LVLs)<br>• Left Ventricle Outflow Tract Diameter (LVOT Diam)<br>• Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs)<br>• Left Ventricle Length (LV Major)<br>• Left Ventricle Width (LV Minor)<br>• Left Ventricle Outflow Tract Area (LVOT)<br>• Left Ventricle Mass Index (LVPWd, LVPWs)<br>• Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs)<br>• Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs)<br>• Mitral Valve<br>• E-Point-to-Septum Separation (EPSS)<br>• Mitral Valve Area Planimetry (MVA Planimetry) |
| Pulmonic valve | Pulmonic Diameter (Pulmonic Diam) |
| Right ventricle | • Right Ventricle Internal Diameter (RVIDd, RVIDs)<br>• Right Ventricle Outflow Tract Diameter (RVOT Diam) |
| System inferior vena cava | • Systemic Vein Diameter (Systemic Diam) |

| 12.02 M-Mode measurements | |
| --- | --- |
| Aorta | • Aortic Root Diameter (Ao Root Diam)<br>• Aortic Valve Diameter (AV Diam)<br>• Aortic Valve Cusp Separation (AVCusp)<br>• Aortic Valve Ejection Time (LVET) |
| Left atrium & Left ventricle | • Left Atrium Diameter to Ao Root Diameter Ratio (LA/Ao Ratio)<br>• Left Atrium Diameter (LA Diam)<br>• Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds)<br>• Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs)<br>• Left Ventricle Ejection Time (LVET)<br>• Left Ventricle Pre-Ejection Period (LVPEP)<br>• Interventricular Septum (IVS) |
| Mitral valve | • E-Point-to-Septum Separation (EPSS)<br>• Mitral Valve Anterior Leaflet Excursion (D-E Excursion)<br>• Mitral Valve D-E Slope (D-E Slope)<br>• Mitral Valve E-F Slope (E-F Slope) |

# 12. Cardiac measurements/ calculations *(cont.)*

| 12.02 M-Mode measurements *(cont.)* | |
|---|---|
| Pulmonic valve | • QRS complex to end of envelope (Q-to-PV close)<br>• Right Ventricle Internal Diameter (RVIDd, RVIDs)<br>• Right Ventricle Outflow Tract Diameter (RVOT Diam) )<br>• Right Ventricle Ejection Time (RVET)<br>• Right Ventricle Pre-Ejection Period (RVPEP) |
| Tricuspid valve | QRS complex to end of envelope (Q-to-TV close) |

| 12.03 Doppler mode measurements | |
|---|---|
| Aortic valve | • Aortic Valve Mean Velocity (AV Trace)<br>• Aortic Valve Velocity Time Integral (AV Trace)<br>• Aortic Valve Mean Pressure Gradient (AV Trace)<br>• Aortic Valve Peak Pressure Gradient (AR Vmax)<br>• Aortic Insufficiency Peak Velocity (AR Vmax)<br>• Aortic Insufficiency End-Diastolic Velocity (AR Trace)<br>• Aortic Valve Peak Velocity (AV Vmax)<br>• Aortic Valve Deceleration Time (AV Trace)<br>• Aortic Valve Ejection Time (AVET)<br>• Aortic Valve Area according to PHT |
| Left ventricle | • Left Ventricle Outflow Tract Peak Pressure Gradient (VLOT Vmax)<br>• Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax)<br>• Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace)<br>• Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace)<br>• Left Ventricle Ejection Time (LVET) |
| Mitral valve | • Mitral Valve Regurgitant Mean Velocity (MR Trace)<br>• Mitral Regurgitant Mean Pressure Gradient (MR Trace)<br>• Mitral Regurgitant Velocity Time Integral (MR Trace)<br>• Mitral Valve Mean Velocity (MR Trace)<br>• Mitral Valve Velocity Time Integral (MR Trace)<br>• Mitral Valve Mean Pressure Gradient (MR Trace)<br>• Mitral Regurgitant Peak Pressure Gradient (MR Vmax)<br>• Mitral Valve Peak Pressure Gradient (MR Vmax) |

| 12.03 Doppler mode measurements *(cont.)* | |
|---|---|
| Mitral valve *(cont.)* | • Mitral Regurgitant Peak Velocity (MR Vmax)<br>• Mitral Valve Peak Velocity (MR Vmax)<br>• Mitral Valve Velocity Peak A (MV A Velocity)<br>• Mitral Valve Velocity Peak E (MV E Velocity)<br>• Mitral Valve Area according to PHT (MV PHT)<br>• Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/A Ratio)<br>• Mitral Valve Acceleration Time (MV ACC Time)<br>• Mitral Valve Deceleration Time (MV Dec. Time)<br>• Mitral Valve Acceleration Time/ Deceleration Time Ratio (MVAcc/ Dec. Time) |
| Pulmonic valve | • Pulmonic Insufficiency Peak Pressure Gradient (PR Vmax)<br>• Pulmonic Insufficiency End-Diastolic Pressure Gradient (PR Trace)<br>• Pulmonic Valve Peak Pressure Gradient (PV Vmax)<br>• Pulmonic Insufficiency Peak Velocity (PR Vmax)<br>• Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax)<br>• Pulmonic Valve Peak Velocity (PV Vmax)<br>• Pulmonary Artery Diastolic Pressure (PV Trace)<br>• Pulmonic Insufficiency Mean Pressure Gradient (PR Trace)<br>• Pulmonic Valve Mean Pressure Gradient (PV Trace)<br>• Pulmonic Insufficiency Mean Square Root Velocity (PR Trace)<br>• Pulmonic Insufficiency Velocity Time Integral (PR Trace)<br>• Pulmonic Valve Mean Velocity (PV Trace)<br>• Pulmonic Valve Velocity Time Integral (PV Trace)<br>• Pulmonic Insufficiency Pressure Half Time (PR PHT)<br>• Pulmonic Valve Flow Acceleration (PV Acc Time)<br>• Pulmonic Valve Acceleration Time (PV Acc Time)<br>• Pulmonic Valve Ejection Time (PVET)<br>• QRS complex to end of envelope (Q-to-PV close)<br>• Pulmonic Valve Acceleration to Ejection TIme Ratio (PV Acc Time, PVET) |

# 12. Cardiac measurements/ calculations *(cont.)*

| **12.03 Doppler mode measurements** *(cont.)* | |
|---|---|
| Right ventricle | • Right Ventricle Outflow Tract Peak Pressure Gradient (RVOT Vmax)<br>• Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax)<br>• Right Ventricle Outflow Tract Velocity Time Integral (RVOT Trace)<br>• Right Ventricle Ejection Time (RV Trace)<br>• Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOT Trace)<br>• Right Ventricle Stroke Volume Index by Pulmonic Flow (RVOT Planimetry, RVOT Trace) |
| System | • Pulmonary Artery Peak Velocity (PV Vmax)<br>• Pulmonary Vein Velocity Peak A (reverse) (P Vein A)<br>• Pulmonary Vein Peak Velocity (P Vein D, P Vein S)<br>• Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic)<br>• Ventricular Septal Defect Peak Velocity (VSD Vmax)<br>• Atrial Septal Defect (ASD Diastolic, ASD Systolic)<br>• Pulmonary Vein A-Wave Duration (P Vein A Dur)<br>• IsoVolumetric Relaxation Time (IVRT)<br>• IsoVolumetric Contraction Time (IVCT)<br>• Pulmonary Vein S/D Ratio (P Vein D, P Vein S)<br>• Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax)<br>• Pulmonic-to-Systemic Flow Ratio (Qp/Qs) |
| Tricuspid valve | • Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax)<br>• Tricuspid Valve Peak Pressure Gradient (TV Vmax)<br>• Tricuspid Regurgitant Peak Velocity (TR Vmax)<br>• Tricuspid Valve Peak Velocity (TV Vmax)<br>• Tricuspid Valve Velocity Peak A (TV A Velocity)<br>• Tricuspid Valve Velocity Peak E (TV E Velocity)<br>• Tricuspid Regurgitant Mean Pressure Gradient (TR Trace)<br>• Tricuspid Valve Mean Pressure Gradient (TV Trace)<br>• Tricuspid Regurgitant Velocity Time Integral (TR Trace)<br>• Tricuspid Valve Mean Velocity (TV Trace)<br>• Tricuspid Valve Velocity Time Integral (TV Trace) |

| **12.03 Doppler mode measurements** *(cont.)* | |
|---|---|
| Tricuspid valve *(cont.)* | • Tricuspid Valve Time to Peak (TV Acc/Dec Time)<br>• Tricuspid Valve Ejection Time (TV Acc/Dec Time)<br>• Tricuspid Valve A-Wave Duration (TV A Dur)<br>• QRS complex to end of envelope (Q-to-TV close)<br>• Tricuspid Valve Pressure Half Time (TV PHT)<br>• Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity |

| **12.04 Color Flow Mode measurements** | |
|---|---|
| Aortic valve | • Proximal Isovelocity Surface Area: Regurgitant Flow (AR Trace)<br>• Proximal Isovelocity Surface Area: Regurgitant Volume Flow (AR Trace)<br>• Proximal Isovelocity Surface Area: Aliased Velocity (AR Vmax) |
| Mitral valve | • Proximal Isovelocity Surface Area: Regurgitant Flow (MR Trace)<br>• Proximal Isovelocity Surface Area: Regurgitant Volume Flow (MR Trace)<br>• Proximal Isovelocity Surface Area: Aliased Velocity (MR Vmax) |

| **12.05 Combination mode measurements** | |
|---|---|
| Aortic valve | • Aortic Valve Area (Ao Diam., LVOT Vmax, AV Vmax)<br>• Aortic Valve Area by Continuity Equation by Peak Velocity (Ao Diam, LVOT Vmax, AV Vmax)<br>• Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace)<br>• Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR)<br>• Aortic Valve Area by Continuity Equation VTI (Ao Diam, LVOT Vmax, AV Trace) |
| Left ventricle | Cardiac Output, Teichholz/Cubic (LVIDd, LVI Ds, HR) |
| Mitral valve | • Stroke Volume by Mitral Flow (MVA Planimetry, MV Trace)<br>• Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR) |

# 12. Cardiac measurements/ calculations *(cont.)*

| 12.06 Cardiac worksheet |
|---|
| Parameter: Lists the mode, the measurement folder and the specific measurement |
| Measured Value: Up to six measurement values for each item. Average, maximum, minimum, or last |
| Generic study in cardiology |

# 13. Probes

| 13.01 4C-RS | |
|---|---|
| Convex probe | |
| Applications | Abdominal, OB/GYN, Vascular, Urological, Thoracic, Pediatric, MSK |
| Number of elements | 128 |
| Convex radius | 60 mm |
| FOV | 58° |
| Footprint | 66.2 x 18.3 mm |
| B-Mode imaging frequency | 2.0, 3.0, 4.0, 5.0 MHz |
| Harmonic imaging frequency | 3.0, 4.0, 5.0 MHz |
| CFM/PDI/PWD frequency | 2.0 MHz (CFM/PDI) 2.5, 2.8, 3.3 MHz |
| Biopsy guide | Multi-angle, reusable bracket |

| 13.02 L6-12-RS | |
|---|---|
| Linear probe | |
| Applications | Vascular, Small parts, Pediatrics, MSK, Thoracic |
| Number of elements | 128 |
| Footprint | 47 x 11.4 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0, 11.0 MHz |
| Harmonic imaging frequency | 8.0, 10.0, 12.0, 13.0 MHz |
| CFM/PDI frequency | 4.0, 5.0, 6.0 MHz |
| PWD frequency | 4.0, 4.5, 5.0 MHz |
| Steered angle | ±20° |
| Biopsy guide | Multi-angle, reusable bracket |

| 13.03 12L-RS | |
|---|---|
| Linear probe | |
| Applications | Vascular, Small parts, Pediatrics, MSK, Thoracic |
| Number of elements | 192 |
| Footprint | 47.1 x 12.7 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0, 12.0 MHz |
| Harmonic imaging frequency | 8.0, 10.0, 12.0, 13.0 MHz |
| CFM/PDI/PWD frequency | 4.2, 6.3, 7.7 MHz |
| Steered angle | ±20° |
| Biopsy guide | Multi-angle, reusable bracket |

| 13.04 E8Cs-RS | |
|---|---|
| Endo micro convex probe | |
| Applications | OB/GYN, Urological, Transvaginal, Transrectal |
| Number of elements | 128 |
| Convex radius | 8.73 mm |
| FOV | 168° |
| Footprint | 18.6 x 13.9 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0 MHz |
| Harmonic imaging frequency | 7.0, 8.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 4.0, 5.0, 6.0 MHz |
| Biopsy guide | Fixed angle, disposable or reusable bracket |

| 13.05 LK760-RS | |
|---|---|
| Linear probe | |
| Applications | MSK |
| Number of elements | 128 |
| Footprint | 67.0 x 13.0 mm |
| B-Mode imaging frequency | 5.0, 7.0, 9.0 MHz |
| Harmonic imaging frequency | 6.0, 8.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 3.5, 4.2, 5.0 MHz |
| Steered angle | ±10° |
| Biopsy guide | Not available |

# 13. Probes *(cont.)*

## 13.06 E8C-RS

Endo micro convex probe

| | |
|---|---|
| Applications | OB/GYN, Urological, Transvaginal, Transrectal |
| Number of elements | 128 |
| Convex radius | 10.73 mm |
| FOV | 128° |
| Footprint | 16.9 x 21.2 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0 MHz |
| Harmonic imaging frequency | 7.0, 8.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 4.2, 5.0, 6.3 MHz |
| Biopsy guide | Fixed angle, disposable or reusable bracket |

## 13.07 8C-RS

Micro convex probe

| | |
|---|---|
| Applications | Pediatrics, Pediatric Cardiac, MSK |
| Number of elements | 128 |
| Convex radius | 10.73 mm |
| FOV | 131° |
| Footprint | 22.0 x 12.0 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0 MHz |
| Harmonic imaging frequency | 6.0, 7.0, 8.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 4.2, 5.0, 6.3 MHz |
| Biopsy guide | Not available |

## 13.08 3Sc-RS

Phased array sector probe

| | |
|---|---|
| Applications | Cardiac, Vascular, Transcranial, Thoracic, Abdominal |
| Number of elements | 64 |
| FOV | 120° |
| Footprint | 23.7 x 18.4 mm |
| B-Mode imaging frequency | 2.0, 3.0, 4.0 MHz |
| Harmonic imaging frequency | 3.0, 3.2, 3.5, 4.0 MHz |
| CFM/PDI/PWD frequency | 1.7, 2.0, 2.5, 3.3 MHz |
| CWD frequency | 1.9 MHz |
| Biopsy guide | Multi-angle, reusable bracket |

## 13.09 6S-RS

Phased array sector probe

| | |
|---|---|
| Applications | Cardiac, Vascular, Transcranial, Pediatrics |
| Number of elements | 64 |
| FOV | 120° |
| Footprint | 23.5 x 16.8 mm |
| B-Mode imaging frequency | 4.0, 5.0, 6.0 MHz |
| Harmonic imaging frequency | 4.0, 5.0, 6.0, 7.0 MHz |
| CFM/PDI/PWD frequency | 2.5 (CFM/PDI), 3.0, 4.0, 4.5 MHz |
| CWD frequency | 4.2 MHz |
| Biopsy guide | Not available |

## 13.10 12S-RS

Phased array sector probe

| | |
|---|---|
| Applications | Pediatrics, Pediatric Cardiac, Vascular, Transcranial |
| Number of elements | 96 |
| FOV | 120° |
| Footprint | 17.6 x 13.2 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0, 11.0 MHz |
| Harmonic imaging frequency | 9.0, 10.0, 12.0 MHz |
| CFM/PDI/PWD frequency | 4.1 (CFM/PDI), 4.5, 5.0, 5.6, 6.7 MHz |
| CWD frequency | 4.2, 5.0, 6.2 MHz |
| Biopsy guide | Not available |

## 13.11 9L-RS

Linear probe

| | |
|---|---|
| Applications | Vascular, Small parts, Pediatrics, MSK, Abdominal, Thoracic |
| Number of elements | 192 |
| Footprint | 53 x 14.1 mm |
| B-Mode imaging frequency | 5.0, 7.0, 9.0 MHz |
| Harmonic imaging frequency | 6.0, 8.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 4.0, 5.0 MHz |
| Steered angle | ±20° |
| Biopsy guide | Multi-angle, reusable bracket |

# 13. Probes *(cont.)*

## 13.12 L8-18i-RS

Linear probe

| | |
|---|---|
| Applications | MSK, Small parts, Vascular |
| Number of elements | 168 |
| Footprint | 34.8 x 11.1 mm |
| B-Mode imaging frequency | 8.0, 12.0, 14.0, 16.0 MHz |
| Harmonic imaging frequency | 9.0, 15.0, 18.0 MHz |
| CFM/PDI/PWD frequency | 6.7, 8.3, 10.0 MHz |
| Steered angle | ±20° |
| Biopsy guide | Not available |

## 13.13 RAB2-6-RS

Convex Volume Probe

| | |
|---|---|
| Applications | Abdominal, OB/GYN, Urological |
| Number of elements | 128 |
| Convex radius | 47.1 mm |
| Footprint | 62.2 x 34.0 mm |
| Volume sweep radius | 24.11 mm |
| FOV | 70° (B), 70° x 84° (volume scan) |
| B-Mode imaging frequency | 3.0, 4.0, 5.0 MHz |
| Harmonic imaging frequency | 4.0, 5.0, 6.0 MHz |
| CFM/PDI/PWD frequency | 2.0, 2.5, 3.0, 4.0 MHz |
| Biopsy guide | Multi-angle, reusable bracket |

# 14. Cart (optional)

The ergonomic trolley cart, features 4 easy on – off lockable 120 mm diameter wheels, system mounting, power cord hooks and clips for neat arrangement of power cords, probe holders with cord management holder, and gel holder.

Advanced cart features optional 3PP, 4D box, power transformer, big battery, height-adjustability.

## 14.01 Cart dimension

| | |
|---|---|
| Dimensions | • Base Cart<br> – L 555 x D 515 x H 890 mm<br>• Advanced Cart<br> – L 556 x D 585 x H 920 mm (Fixed)<br> – L 556 x D 585 x H 900~1190 mm<br>   (Height-adjustable) |
| Weight | • Base Cart<br> – 21 Kg<br>• Advanced Cart<br> – ≤ 35 Kg |

## 14.02 Printer shelf (optional)

| | |
|---|---|
| Dimensions | • Base Cart<br> – L 293 x D 217 x H 122 mm<br>• Advanced Cart<br> – L 300 x D 204 x H 134 mm |

## 14.03 Cart tray (optional)

The cart tray offers storage space for accessories

| | |
|---|---|
| Dimensions | • Base Cart<br> – L 305 x D 222 x H 77 mm<br>• Advanced Cart<br> – L 343 x D 177 x H 65 mm<br> – L 296 x D 143 x H 200 mm |

## 14.04 3PP (optional)

The advanced cart is compatible with optional three external probe port extensions

Dimensions: L 217 mm X D 52 mm X H 126 mm

## 14.05 Power Transformer(optional)

Power transformer offers external power supply

| | |
|---|---|
| Dimensions | • Advanced Cart<br> – L 276 x D 197 x H 106 mm |

## 14.06 4D Box (optional)

4D scanning function

| | |
|---|---|
| Dimensions | • Advanced Cart<br> – L 230 x D 87 x H 50 mm |

## 14.07 Big Battery (optional)

Big battery case offers extended battery supply

| | |
|---|---|
| Dimensions | • Advanced Cart<br> – L 206 x D 132 x H 296 mm |

## 14.08 ECG Module Shelf (optional)

| | |
|---|---|
| Dimensions | • Advanced Cart<br> – L 262 x D 70 x H 55 mm |

## 14.09 GYN probe holder (optional)

Horizontal positioning of endocavitary probe

| | |
|---|---|
| Dimensions | L 217 mm X D 52 mm X H 126 mm |

# 14. Cart (optional)
(cont.)

### 14.10 Gel Warmer (optional)

| Dimensions | • Advanced Cart<br>   – L 80 x D 80 x H 155 mm |
|---|---|

### 14.11 Dimension with additional options

| Dimensions | • Cart<br>   – L 555 x D 590 x H 950 mm<br>• Advanced Cart<br>   – L 556 x D 585 x H 980 mm<br>   – L 556 x D 585 x H 960~1250 mm |
|---|---|
| Weight | • Cart<br>   – 23 Kg<br>• Advanced Cart<br>   – ≤ 47 Kg |

# 15. Trolley case

The case features 3 protective compartments for the probes, and 3 additional compartments for power adapters, cord, and manuals.

### 15.01 Dimension

| L 495 x D 275 x H 460 mm |
|---|
| Weight: 4 kg |

# 16. Inputs and outputs

### 16.01 Inputs and outputs

| HDMI output(1920 x 1080 resolution) |
|---|
| S-video and composite output with optional adapter |
| 1000 BASE-TX Ethernet (RJ45) |
| 4 USB ports |

# 17. Safety conformance

The Versana Active is CE marked to Council Directive 93/42/EEC on medical devices

| Conforms to the following standards for safety | • IEC 60601-1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance<br>• IEC 60601-1-2 Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral Standard: Electromagnetic disturbances – requirements and tests EMC Emissions Group 1 Class A device requirements as per CISPR 11<br>• IEC 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment<br>• ISO 10993-1 Biological evaluation of medical devices – Part 1 Evaluation and testing within a risk management process<br>• EN 62366-1 Medical devices – Part 1: Application of usability engineering to medical devices |
|---|---|

# Versana Active™

v1.5

**Transducer Guide**

| | Applications | Footprint | Frequency Range | FOV | Biopsy Guide |
|---|---|---|---|---|---|
| 4C-RS | Abdominal, OB/GYN, Vascular, Urological , Thoracic, Pediatric, MSK | 18.3 x 66.2 mm | 2.0 – 5.0 MHz | 58° | E8385NA |
| L6-12-RS | Vascular, Small parts, Pediatrics, MSK, Thoracic | 11.4 x 47.0 mm | 4.0 – 13.0 MHz | 38.4 mm | H40432LC |
| 12L-RS | Vascular, Small parts, Pediatrics, MSK, Thoracic | 12.7 x 47.1 mm | 4.2 – 13.0 MHz | 38.4 mm | H48392LT H48392LL |
| 9L-RS | Vascular, Small parts, Pediatrics, MSK, Abdominal, Thoracic | 53 x 14.1 mm | 4.0 – 10.0 MHz | 44 mm | H4906BK |
| E8C-RS | OB/GYN, Urological, Transvaginal, Transrectal | 16.9 x 21.2 mm | 4.2 – 10.0 MHz | 128° | E8385MJ or H40412LN |
| E8CS-RS | OB/GYN, Urological, Transvaginal, Transrectal | 18.6 x 13.9 mm | 4.0 – 10.0 MHz | 168° | E8385MJ or H40412LN |
| 3sC-RS | Cardiac, Vascular, Transcranial, Thoracic, Abdominal | 23.7 x 18.4 mm | 1.7 – 4.0 MHz | 120° | H46222LC |
| 6S-RS | Cardiac, Vascular, Transcranial, Pediatrics | 23.5 X 16.8 mm | 2.5 – 7.0 MHz | 120° | not available |
| 12S-RS | Pediatrics, Pediatric Cardiac, Vascular, Transcranial | 17.6 x 13.2 mm | 4.1 – 12.0 MHz | 120° | not available |

| | Applications | Footprint | Frequency Range | FOV | Biopsy Guide |
|---|---|---|---|---|---|
| RAB2-6-RS* | Abdominal, OB/GYN, Urological | 62.2 x 34.0 mm | 2.0 – 6.0 MHz | 70° (B), 70° x 84° (Volume scan) | H48681ML |
| 8C-RS | Pediatrics, Pediatric Cardiac, MSK | 12.0 x 22.0 mm | 4.2 – 10.0 MHz | 131° | not available |
| L8-18i-RS | MSK, Small parts, Vascular | 34.8 x 11.1 mm | 6.7 – 18.0 MHz | 25.2 mm | not available |
| LK760-RS | MSK | 67.0 x 13.0 mm | 3.5 – 10.0 MHz | 59.9 mm | not available |

*Available on Versana Active v1.5