



Versana Premier™

Ultrasound System

Specification sheet

February 28, 2019

Rev. 5

Product description

Versana Premier ultrasound is designed to help you apply your clinical and imaging skills to deliver high-quality care to the wide range of patients you see daily. This high-quality system is well suited for general practice clinics, physical check-up centers, community healthcare centers, screening centers, and other facilities worldwide that offer basic medical care. Its versatility covers a broad range of examinations: abdominal, OB/GYN, cardiac, small parts, urology, vascular, pediatrics and MSK.





1. General specifications

1.01 Dimensions and weight

| | |
|---------------------|--|
| Height with monitor | <ul style="list-style-type: none"> • Max. 1780 mm (70.1 in) • Min. 1405 mm (55.3 in) |
| Width | <ul style="list-style-type: none"> • Keyboard: 593 mm (23.3 in) • Caster: 717 mm (28.2 in) |
| Depth | <ul style="list-style-type: none"> • Maximum: 839 mm (33.0 in) • Caster: 803 mm (31.6 in) |

Weight (no peripherals): less than 70 kg

1.02 Electrical power

Voltage 100 – 240 VAC

Frequency 50/60 Hz

Power consumption maximum of 450 VA with peripherals

1.03 Console design

Max 4 active probe ports

Integrated HDD: 500 GB

Integrated speakers

Probe holders, removable for cleaning and washing

Gel holder, removable for cleaning and washing

Gel warmer

Front and rear handles

Probe cable management slots

Easily removable air filters

Wheels: Locking mechanism that provides rolling lock and caster swivel lock

2. User interface

2.01 Operator keyboard

Height adjustable

Full alphanumeric keypad covered with washable protection film

10 TGC pods

9.9" (213.4 mm) touch screen with 1024 x 600 resolution

2.02 LED Monitor

21.5" (482.6 mm) high-resolution: 1920 x 1080

Articulating monitor arm

2.02 Monitor (cont.)

| | |
|-----------------|--|
| Tilt/Rotate/Pan | <ul style="list-style-type: none"> • Tilt angle: +25°/-90° • Rotate angle: -130°, +50° • Horizontal Pan: 650 mm • Vertical Pan: 150 mm |
|-----------------|--|

Fold-down and lock mechanism for transportation

Brightness and contrast adjustment

3. System overview

3.01 Applications

Abdominal

Obstetrical

Gynecological

Small parts

Musculoskeletal

Vascular/peripheral vascular

Urological

Pediatric

Transcranial

Cardiac

3.02 Scanning methods

Electronic convex

Electronic linear

Electronic micro convex

Electronic sector

Mechanical volume sweep

3.03 Transducer types

Convex array

Linear array

Microconvex array

Sector phased array

Volume probes (4D)

Bi-plane convex array



3. System overview *(cont.)*

3.04 Operating modes

B-Mode

Coded Phase Inversion Harmonic Imaging

M-Mode

Anatomical M-Mode (option)

Curve 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)

3D/4D volume modes (option)

Elastography (option)

Multi-gestational calculations

Hip dysplasia calculations

Gynecological calculations

Vascular calculations

Breast Productivity

Urological calculations

Auto bladder

Auto detect bladder contour in 2 orthogonal planes and calculate bladder volume

Renal calculations

Cardiac calculations

On-board reporting package

MPEGVue

Network storage

Remote capability: InSite™ ExC

My Trainer

Scan Coach

Scan Assistant

4. System standard features

Installation wizard

Whizz

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

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

SonoBiometry (BPD/HC/AC/HL/FL)

Fetal trending

5. System options

CW Doppler

Anatomical M-Mode

Curve AMM

LOGIQ View

Elastography

Advanced 3D (Easy 3D)

B-Flow (B-Flow Color)

Contrast agency detection

Tissue Velocity Imaging (TVI) with Q-Analysis

TVM

Stress Echo

Auto EF

Static 3D/
Real-time 4D

- TUI
- VOCAL

Auto IMT

Breast Care (available on Software R1.0.5 or later)



5. System options *(cont.)*

| | |
|-------------------------|--|
| Thyroid Productivity | A package in thyroid measurement including measurement and relevant descriptions |
| Needle Recognition | |
| Follow-up tool | |
| DICOM® 3.0 connectivity | |
| Tricefy™ Uplink | |

6. Peripheral options

| |
|--|
| Sony UP-D898MD B/W thermal printer |
| Sony UP-D898MD B/W thermal printer with fixture kit |
| Sony UP-898DC Printer |
| Sony UP-D25MD color thermal printer |
| 1-pedal type footswitch 'Whanam FSU-1000' |
| 3-pedal type footswitch 'MKF 2-MED USB GP26' |
| 8GB USB Stick |
| 1TB external USB HDD |
| DVD RW kit |
| USB ECG kits (AHA/IEC) |
| ECG Module (option) |
| USB Wireless adaptor (sales availability varies in different countries) |
| HP Office 200 printer |
| Bluetooth adapter |

7. Display modes

7.01 Live and stored display format

| | |
|-------------------------|--|
| Widescreen | <ul style="list-style-type: none"> • Full size and split screen • Both with thumbnails for still and Cine |
| Review image format: | 4x4 and thumbnails for still and Cine |
| Simultaneous capability | <ul style="list-style-type: none"> • Dual B (B/B) • B/CFM or PDI • B/PW or B/CWB/M • B + CFM/M • Real-time triplex mode (B + CFM or PDI+PW or CW) • B-Flow or B-Flow Color |
| Zoom | Write (HD)/read 64X |

7.01 Live and stored display format *(cont.)*

| | |
|-------------------------------------|--|
| Colorized Image | <ul style="list-style-type: none"> • Colorized B • Colorized B-Flow • Colorized M • Colorized PW • Colorized CW • Colorized 3D • Colorized 4D |
| Timeline display | <ul style="list-style-type: none"> • Independent dual B/PW or CW display • Display Format <ul style="list-style-type: none"> – Top/bottom selectable format (Size: 1/2:1/2; 1/3:2/3; 2/3:1/3) – Side/side selectable format (Size: 1/2:1/2; 1/4:3/4; TL only) |
| Virtual convex | |
| LOGIQ View | |
| TUI (Tomography Ultrasound Imaging) | |

8. Selectable alternating modes

| |
|--|
| B/M |
| B/PW |
| B + CFM/M |
| B + CFM (PDI)/PW (CW) |
| Freehand 3D-Mode |
| Freehand 3D-Mode Color |
| B/CW |
| B + CFM (PDI)/CW |
| Multi-image split screen (quad screen) |
| Live and/or frozen |
| B + B/CFM or PDI |
| PW/M |
| Independent CINE playback |



9. Display annotation

9.01 General user interface

Patient name: First, Last (Max. 28 characters displayed per each; up to 64 total characters per each)

Patient ID (Max. 64 characters)

Other ID (Max. 64 characters)

Age, sex and date of birth

Hospital name (Max. 23 characters displayed)

| | |
|------------------------------------|--|
| Date format: 3 types selectable | <ul style="list-style-type: none"> • MM/DD/YYYY • DD/MM/YYYY • YYYY/MM/DD |
|------------------------------------|--|

| | |
|------------------------------------|--|
| Time format: 2 types selectable | <ul style="list-style-type: none"> • 24 hours • 12 hours |
|------------------------------------|--|

| | |
|----------------------|---|
| Gestational age from | <ul style="list-style-type: none"> • LMP • GA • EDD • BBT |
|----------------------|---|

| | |
|---------------------------|--|
| Displayed acoustic output | <ul style="list-style-type: none"> • TIS: Thermal Index Soft Tissue • TIC: Thermal Index Cranial (Bone) • TIB: Thermal Index Bone • MI: Mechanical Index |
|---------------------------|--|

% of maximum power output

Probe name

Map names

Probe orientation

Depth scale marker

Lateral scale marker

Focal zone markers

Image depth

Zoom depth

9.02 B-Mode

Gain

Dynamic range

Imaging frequency

Edge enhance

Frame average

Frame rate

Gray map

ATO (Auto Tissue Optimization)

SRI-HD

CrossXBeam

9.03 Color Flow mode

Line density

Frame average

Packet size

| | |
|----------------------|--|
| Color scale: 2 types | <ul style="list-style-type: none"> • Power • Directional PDI |
|----------------------|--|

Color velocity range and baseline

Color threshold marker

Color gain

PDI

Inversion

Doppler frequency

9.04 PDI mode

Line density

Frame averaging

Packet size

Directional PDI

Color velocity range and baseline

Color threshold marker

PDI gain

Inversion

9.05 B-Flow/B-Flow Color mode

Gain

Background

SRI-HD

Accumulation

Flow module

Rejection

Colorize

Edge enhance

Gray map

Frame average

Power output

Sensitivity/PRI

Dynamic range

Frequency



9. Display annotation *(cont.)*

9.05 B-Flow/B-Flow Color mode *(cont.)*

Suppression

Flash suppression

Enhance

Threshold

Map compress

Default map

Wall filter

Transparency

9.06 M-Mode

Gain

Dynamic range (use the dynamic range of B-Mode)

Time scale

AMM

Curve AMM

9.07 Doppler Mode

Gain

Angle

Sample volume depth and width length

Wall filter

Velocity and/or frequency scale

Spectrum inversion

Time scale

Scale

Doppler frequency

9.08 Elastography

Frame reject

Axial smoothing

Noise reject

Sample volume

Lateral smoothing

Window

Map

Frame average

9.08 Elastography *(cont.)*

Line density

Frequency

Soft compress

Hard compress

Scale

9.09 3D/4D

Tile/mix

Active curve

Reset curve

Lower threshold

Volume angle

B quality

3D orient

Render mode

Colorize

Direction

Render 1 gray

Render 2 gray

Adv. Render

Transparency

Reference image

Cut mode

Cut depth

Depth

Rotational angle

Step angle

Rotation axis

Start angle

End angle

Loop speed

9.10 Easy 3D

Utilities

Texture

Gray surface



9. Display annotation *(cont.)*

9.10 Easy 3D *(cont.)*

Render

Threshold 1

Threshold 2

Scan distance

Colorize

9.11 Advance 3D

Define axis

Group planes

Reslice

Tile

9.12 Contrast

Visualization

Contrast Clock 1

Contrast Clock 2

Contrast only

Dual view

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

10. General system parameters

10.01 System setup

9 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

Customized comment home position

10.02 System scanning parameters

Digital agile beamformer architecture

225,792 system processing channels

Max. frame rate: 1447 fps, depending on probe and mode (Convex probe under whole view angle and 18 cm scanning depth, up to 46 fps; Sector probe under with view angle of 90° and 18 cm scanning depth, up to 81 fps)

Displayed imaging depth: 1 – 33 cm

Minimum depth of field: 0 – 2 cm (zoom), depending on probe

Maximum depth of field: 0 – 33 cm, depending on probe

Transmission focus: 1 – 8 focal points selectable, depending on probe and application

Quad beamforming

Continuous dynamic receive focus/aperture

Multi-frequency/wideband technology

Frequency range: 1.7 to 18 MHz

Shades of gray: 256

Systematic dynamic range: 275 dB

Adjustable Field of View (FOV): up to 168°, depending on probe

Image reverse: right/left

Image rotation of 0°, 90°, 180°, 270°



10. General system parameters *(cont.)*

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, depending on probe |
| B colorization | 9 types |
| Frequency | Up to 11 selectable, depending on probe |
| Line density | Max. 852, 5/6 steps, depending on probe |
| Line density zoom | 5 steps |
| Thermal index | Tlc, Tls, Tlb |
| Image reverse | On/off |
| Focus number | 8 steps |
| Focus width | 3 types |
| Suppression | 6 steps |
| Edge enhance | 7 steps |
| Rejection | 6 steps |
| Steered linear | $\pm 12^\circ$, $\pm 15^\circ$, depending on probe |
| FOV or angle, depending on probe | |
| SRI-HD | Up to 6 levels selectable |
| CrossXBeam | Up to 7 angles selectable |
| Depth | 1 – 33 cm, 0.5 or 1 cm per step, depending on probe |

10.04 Coded Harmonic Imaging

Coded Phase Inversion Harmonic Imaging

Available on all probes

| | |
|-------------------|-------------------------------|
| Line density | 5/6 steps, depending on probe |
| Line density zoom | 5 steps |
| Suppression | 6 steps |
| Edge enhance | 7 steps |
| Gray scale map | 7 types |
| Tint map | 9 types |
| Gain | 0 – 90 dB, 1 dB per step |

10.04 Coded Harmonic Imaging *(cont.)*

| | |
|---------------|--|
| Dynamic range | 51 to 78 dB, 3 dB per step; 36 – 48/78 – 96 dB, 6 dB per step |
| Rejection | 6 steps |
| Frequency | Up to 4 steps, depending on probe |

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 of spatial compounding

Live side-by-side DualView display

| | |
|-----------------|--|
| Compatible with | <ul style="list-style-type: none"> • Color Mode • PW • SRI-HD • Coded Harmonic Imaging • Virtual Convex |
|-----------------|--|

Available on 4C-RS, L6-12-RS, E8C-RS, 8C-RS, RAB2-6-RS, L8-18i-RS, BE9CS-RS, E8Cs-RS, 12L-RS, LK760-RS, RIC5-9A-RS

10.07 Color Flow mode

| | |
|--------------------------|---|
| Baseline | 0 – 100%, 10% per step |
| Invert | On/off |
| 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, $\pm 10^\circ$, $\pm 15^\circ$, $\pm 20^\circ$ |
| Packet size | 8 – 24, depending on probe and application |
| Line density | 5 steps |
| Line density zoom | 5 steps |
| Frame average | 7 steps |
| PRF | 0.1 – 25 KHz, 19 steps |
| Spatial filter | 6 steps |
| Gain | 0 – 40 dB, 0.5 dB per step |
| Wall filter | 4 steps, depending on probe and application |



10. General system parameters *(cont.)*

10.07 Color Flow mode *(cont.)*

| | |
|--|------------------------------------|
| Scanning size (FOV or angle) | Depending on probe |
| 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 4 steps, depending on probe |
| Color maps, including velocity-variance maps | 14 types, depending on application |
| Transparent map | 5 steps |
| Color threshold | 0 – 100%, 10% per step |
| Accumulation | 8 steps |
| Flash suppression | |

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, $\pm 10^\circ$, $\pm 15^\circ$, $\pm 20^\circ$ |
| Packet size | 8 – 24, depending on probe and application |
| Spatial filter | 6 steps |
| Frame average | 7 steps |
| PRF | 0.1 – 25 KHz, 19 steps |
| Power threshold | 0 – 100%, 10% per step |
| Gain | 0 – 40 dB, 0.5 dB per step |
| Wall filter | 4 steps, depending on probe and application |
| CF/PDI frequency | Up to 15 steps, depending on probe |
| Transparent map | 5 steps |
| Invert | On/off |
| Accumulation | 8 steps |

10.09 Auto Optimization

| | |
|--|---|
| Optimize B-Mode image to improve contrast resolution | |
| Selectable amount of contrast resolution improvement (low, medium, high) | |
| Auto-Spectral Optimize adjusts | <ul style="list-style-type: none"> • Baseline • Invert • PRF (on live image) |

10.10 M-Mode

| | |
|---------------------|--|
| Gain | -20 – 20 dB, 1 dB per step |
| Dynamic range | 36 – 96 dB/36 – 48 dB/78 – 96 dB, 6 dB per step; 48 – 78 dB, 3 dB per step; |
| Gray scale map | 6 or 8 types, depending on probe |
| Colorization | 9 types |
| Scanning size | FOV or angle, depending on probe |
| Rejection | 6 steps |
| M/PW display format | V-1/3B, V-1/2B, V-2/3B, H-1/2B, H-1/4B, timeline only (Vert 1/3B, Vert 1/2B, Vert 2/3B, Horiz 1/2B, Horiz 1/4B, TL only) |

10.11 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 |
| Curve AMM |

10.12 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, depending on probe |
| Wall filter | 5.5 – 5000 Hz, 27 steps, depending on probe |
| PW colorization | Up to 6 types |
| Velocity scale range | <ul style="list-style-type: none"> • 0.1 – 6670 cm/s • Sweep speed: 0 – 7, 8 steps |
| Sample volume depth | 0.1 – 33 cm, 0.1 cm per step, depending on probe |



10. General system parameters *(cont.)*

10.12 Pulse Wave Doppler mode *(cont.)*

| | |
|--------------------|---|
| SV gate | 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16 mm |
| Angle correction | -90° – 90°, 1° per step |
| Spectrum inversion | |
| Duplex | Simultaneous: on/off (PW only) |
| PW angle steer | 0°, ±10°, ±15°, ±20° (use angle steer of B-Mode) |
| Trace method | Off, Max, Mean |
| Baseline shift | 11 steps |
| Doppler Auto Trace | |
| 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 |

10.13 Continuous Wave Doppler mode (option)

| | |
|--------------------|---|
| Gray scale map | 8 types |
| Baseline | 11 steps |
| Angle correct | -90° – 90°, 1° per step |
| Spectral color | 6 types |
| Invert | On/off |
| Spectral averaging | 5 steps |
| Gain | 0 – 85 dB, 1 dB per step |
| Wall filter | 5.5 – 5000 Hz, 27 steps, depending on probe and application |
| CW-Mode includes | <ul style="list-style-type: none"> • Transmit frequency: 1.9, 4.2, 5, 6.2 MHz • CW colorization: tint map A/B/C/D/E/F • Velocity scale range: 0.1 – 6105 cm/s • Spectrum inversion • Trace method: Max, Mean • Doppler Auto Trace: Frozen, Live, Off • Trace direction: Above, Below, Both |
| Trace sensitivity | 0 – 40, 2 per step |

10.14 Cine memory/image memory

Cine memory: 384 MB

Selectable Cine sequence for Cine review

Prospective Cine mark

Measurements/calculations and annotations on Cine playback

Scrolling timeline memory

Dual image Cine display

10.14 Cine memory/image memory *(cont.)*

Quad image Cine display

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%)

10.15 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 | <ul style="list-style-type: none"> • DICOM – compressed/uncompressed, single/multi-frame, with/without Raw Data • Export JPEG, WMV (MPEG 4) and AVI formats • DICOM still image storage size: ~2.1 MB • Display format: full size, 4x4 and thumbnails |
| Storage devices | <ul style="list-style-type: none"> • Internal hard drive partition of 356 GB for image storage • External USB HDD and USB memory stick support for Import, Export, DICOM Read, SaveAs, and MPEGVue • CD-RW storage: 700 MB • DVD storage: -R (4.7 GB) |

10.16 Connectivity and DICOM

| | |
|-----------------------------|--|
| Ethernet network connection | <ul style="list-style-type: none"> • DICOM 3.0 (option) • Verify • Print • Store • Modality worklist • Storage commitment • Modality Performed Procedure Step (MPPS) • Query/retrieve • Structured reporting template – Can be compared to vascular and OB standard • Remote capability InSite ExC |
|-----------------------------|--|



10. General system parameters *(cont.)*

10.17 Virtual Convex

Provides a convex field of view

Compatible with CrossXBeam

Available on linear and sector transducers

10.18 LOGIQ View (option)

Extended field of view imaging

Available on 4C-RS, L6-12-RS, 8C-RS, 3Sc-RS, E8C-RS, E8Cs-RS, RAB2-6-RS, L8-18i-RS, 6S-RS, BE9CS-RS, LK760-RS, 12L-RS, 12S-RS, RIC5-9A-RS

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

10.19 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: 0 – 100%

Threshold1: 0 – 255

Threshold2: 0 – 255

Scan distance: 1.0 – 15.0

Colorize: 0 – 360

10.20 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

10.21 Static 3D/Real-time 4D (option)

Available on RAB2-6-RS, RIC5-9A-RS

| | |
|---------------------|--|
| Acquisition modes | <ul style="list-style-type: none"> • Static 3D • Real-time 4D |
| Visualization modes | <ul style="list-style-type: none"> • 3D rendering (diverse surface and intensity projection modes) • Sectional planes (3 section planes perpendicular to each other) |
| Render Mode | Surface Texture, Surface Smooth, Max-, Min-, X-ray, Mix Mode of two render modes |
| Display format | <ul style="list-style-type: none"> • Quad: A-/B-/C-Plane/3D • Dual: A-Plane/3D • Single: 3D |

Curved 3-point render start

| | |
|----------|--|
| 3D Movie | <ul style="list-style-type: none"> • Loop Speed: 6 – 400 • Scalpel: 3D cut tool • Cut mode: Inside Contour/Outside Contour/Inside Box/Outside Box/ Small Eraser/Big Eraser • Cut depth: Full/UserDefine • Depth: 0 – 1000 • 3D rotation Cine • Rotational angle: 30 – 360° • Step angle: 1 – 15° • Rotation axis: X/Y • 3D volume review • Start frame: Define start frame • End frame: Define end frame • Run/Stop |
|----------|--|

Niche

| | |
|-------------------------------------|---|
| TUI: Tomographic Ultrasound Imaging | <ul style="list-style-type: none"> • Display format: 1x1/1x2/2x2/3x3 • Slices: 3 – 19 • Slices distance: 0.5 – 40 mm |
| VOCAL (option) | Virtual Organ Computer-aided Analysis |
| Real-time 4D | <ul style="list-style-type: none"> • 4D Volume Cine • LoopSpeed: 6 – 400 • Run/Stop |

10.22 B-Flow (option)

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



10. General system parameters *(cont.)*

10.22 B-Flow (option) *(cont.)*

| | |
|---------------|--------------------------------|
| Tint map | 5 maps |
| Dynamic range | 36 – 96 dB, 16 dB per step |
| Rejection | 6 steps |
| Gain | 0 – 90 dB range, 1 dB per step |
| B-Flow Color | |
| Accumulation | 8 levels |

10.23 Elastography (option)

Available on L6-12-RS/E8Cs-RS/4C-RS/12L-RS

| | |
|---------------------|---|
| Semi-quantification | <ul style="list-style-type: none"> • Frame reject: 0 – 8 • Axial smoothing: 0 – 4 • Noise reject: 0 – 8 • Sample Volume: 0 – 4 • Lateral smoothing: 0 – 4 • Window: 0 – 8 • Map: 8 • Frame average: 0 – 10 • Line Density: 0 – 4 • Soft compress: 0 – 10 • Hard compress: 0 – 10 |
|---------------------|---|

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

Q-Analysis: 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 Contrast agency detection (option)

| | |
|--------------------|---|
| Available on 4C-RS | <ul style="list-style-type: none"> • Line density: 0, 1, 2, 3, 4 • SRI HD: 0, 1, 2 • Suppression: 0, 1, 2, 3, 4, 5 • Frame average: 0, 1, 2, 3, 4, 5, 6, 7 • Dynamic range: 36 – 96 dB • Rotation: Up/down • Modes: General, Resolution and Penetration; Frequencies • Display tissue image and contrast-enhanced image simultaneously in split screen • 2 contrast timers • Time delay: 0.3 – 10 seconds • Accumulation mode: 8 steps • Maximum Enhance Mode: On/off • Gray scale map: 10 types • Colorization: On/off, 6 steps • Flash • Time Intensity Curve (TIC) Analysis • Auto MI control • Time trigger scan: 0.3 – 10 seconds; from 0.5 seconds to 10 seconds, 0.5 seconds per step • Flash/burst mode • Contrast tech: AM • Single view/dual view • Visualization: Contrast, Tissue, Hybrid Contrast • Hybrid map: 6 types |
|--------------------|---|

10.27 Stress Echo (option)

Advanced and flexible stress echo examination capabilities

- Provides exercise and pharmacological protocol templates
- 8 default templates
- Template editor for user configuration of existing templates or creation of new templates
- Reference scan display during acquisition for stress level

Comparison (dual screen)

- Baseline level/Previous level selectable
- Raw data continuous capture
- Over 87.5 seconds available
- Wall motion scoring (bullseye and segmental)
- Smart stress: Automatically set up various scanning parameters (geometry, frequency, gain, etc.) according to same projection on previous level



10. General system parameters *(cont.)*

10.28 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 to the current exam.

10.29 Breast Care (option) *(available on Software R1.0.5 or later)*

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

10.30 Needle recognition (option)

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

10.31 Scan Coach

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 and animations to depict information related to each step. It covers five applications.

- Abdomen
- Obstetrics
- Gynecology
- Cardiology
- Vascular

10.32 My Trainer

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

10.33 Battery (option)

The lithium ion battery provides power when an AC power source is not available. About 15 minutes of battery life can be expected with fully charged battery in use to supply power to the system.

10.34 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.

10.35 InSite™ ExC

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

10.36 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.

10.37 Controls available while “live”

Write Zoom

| | |
|-------------------------|--|
| B/M/ CrossXBeam-Mode | <ul style="list-style-type: none"> • Gain • TGC • Dynamic range • Acoustic output • Transmission focus position • Transmission focus number • Line density control • Sweep speed for M-Mode • Number of angles for CrossXBeam |
| PW-Mode | <ul style="list-style-type: none"> • Gain • Dynamic Range • Acoustic Output • Transmission Frequency • Scale • Wall Filter |
| PW-Mode <i>(cont.)</i> | <ul style="list-style-type: none"> • Sample Volume Gate <ul style="list-style-type: none"> – Length – Depth • Velocity Scale |
| Color Flow mode | <ul style="list-style-type: none"> • CFM Gain • CFM Velocity Range • Acoustic Output • Wall Filter • Packet Size • Frame Rate Control • CFM Spatial Filter • CFM Frame Averaging • Frequency/Velocity Base Line Shift |

10.38 Controls available on Freeze or Recall

Automatic Optimization

SRI-HD

CrossXBeam – Display non-compounded and compounded image simultaneously in split screen

3D reconstruction from a stored Cine loop

B/M/CrossXBeam Mode (CrossXBeam is disabled on Freeze or Recall)



11. Measurements/calculations *(cont.)*

10.38 Controls available on Freeze or Recall *(cont.)*

- TGC
- Colorized B and M
- Frame average (loops only)
- Dynamic range
- Anatomical M-Mode (Freeze only)
- Gray map
- Post gain
- Baseline shift (PW, CW)
- Sweep speed
- Invert spectral waveform
- Compression
- Rejection
- Colorized spectrum
- Display format
- Doppler audio
- Angle Correct
- Quick Angle Correct
- Auto Angle Correct (can't adjust in Freeze)
- Overall gain (loops and stills)
- Color map
- Transparency map
- Frame averaging (loops only)
- Flash suppression (disable in Freeze)
- CFM display threshold
- Spectral invert for Color/Doppler
- Anatomical M-Mode on Cine loop

11.02 General M-Mode

- M-Depth
- Distance
- Time
- Slope
- Heart rate

11.03 General Doppler measurements/calculations

- Velocity
- Time
- A/B ratio (velocities/frequency ratio)
- PS (Peak Systole)
- ED (End Diastole)
- 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. Measurements/calculations

11.01 General B-Mode

- Depth and distance
- Circumference (ellipse/trace)
- Area (ellipse/trace)
- Volume (ellipsoid)
- % Stenosis (area or diameter)
- Angle between two lines



11. Measurements/calculations (cont.)

11.05 OB measurements/calculations

| | |
|---------------------------------|---|
| Gestational age by | <ul style="list-style-type: none"> • GS (Gestational Sac) • CRL (Crown Rump Length) • FL (Femur Length) • BPD (Biparietal Diameter) • AC (Abdominal Circumference) • HC (Head Circumference) • APTD x TTD (Anterior/Posterior Trunk Diameter by Transverse Trunk Diameter) |
| Trunk Diameter | <ul style="list-style-type: none"> • FTA (Fetal Trunk Cross-sectional Area) • HL (Humerus Length) • BD (Binocular Distance) • FT (Foot Length) • OFD (Occipital Frontal Diameter) • TAD (Transverse Abdominal Diameter) • TCD (Transverse Cerebellum Diameter) • THD (Thorax Transverse Diameter) • TIB (Tibia Length) • ULNA (Ulna Length) |
| Estimated Fetal Weight (EFW) by | <ul style="list-style-type: none"> • AC, BPD • AC, BPD, FL, HC • AC, FL, HC • BPD, APTD, TTD, FL |
| Calculations and ratios | <ul style="list-style-type: none"> • FL/BPD • FL/HC • CI (Cephalic Index) • CTAR (Cardio-Thoracic Area Ratio) |
| SonoBiometry | <ul style="list-style-type: none"> • BPD • HC • AC • HL • FL |

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

11.07 Vascular measurements/calculations

- SYS DCCA (Systolic Distal Common Carotid Artery)
- DIAS DCCA (Diastolic Distal Common Carotid Artery)
- SYS MCCA (Systolic Mid Common Carotid Artery)
- DIAS MCCA (Diastolic Mid Common Carotid Artery)
- SYS PCCA (Systolic Proximal Common Carotid Artery)
- DIAS PCCA (Diastolic Proximal Common Carotid Artery)
- SYS DICA (Systolic Distal Internal Carotid Artery)
- DIAS DICA (Systolic Distal Internal Carotid Artery)
- SYS MICA (Systolic Mid Internal Carotid Artery)
- DIAS MICA (Diastolic Mid Internal Carotid Artery)
- SYS PICA (Systolic Proximal Internal Carotid Artery)
- DIAS PICA (Diastolic Proximal Internal Carotid Artery)
- SYS DECA (Systolic Distal External Carotid Artery)
- DIAS DECA (Diastolic Distal External Carotid Artery)
- SYS PECA (Systolic Proximal External Carotid Artery)
- DIAS PECA (Diastolic Proximal External Carotid Artery)
- VERT (Systolic 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



11. Measurements/calculations (cont.)

| 11.09 Cardiac measurements/calculations | |
|---|---|
| 11.09.01 B-Mode measurements | |
| Aorta | <ul style="list-style-type: none"> • Aortic Root Diameter (Ao Root Diam) • Aortic Arch Diameter (Ao Arch Diam) • Ascending Aortic Diameter (Ao Asc) • Descending Aortic Diameter (Ao Desc Diam) • Aorta Isthmus (Ao Isthmus) • Aorta (Ao st junct) |
| Aortic valve | <ul style="list-style-type: none"> • Aortic Valve Cusp Separation (AV Cusp) • Aortic Valve Area Planimetry (AVA Planimetry) • (Trans AVA) |
| Left atrium | <ul style="list-style-type: none"> • Left Atrium Diameter (LA Diam) • LA Length (LA Major) • LA Width (LA Minor) • Left Atrium Area (LAA(d), LAA(s)) • Left Atrium Volume, Single Plane, Method of Disk (LAEDV A2C, LAESV A2C) (LAEDV A4C, LAESV A4C) |
| Left ventricle | <ul style="list-style-type: none"> • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Internal Diameter (LVIDd, LVI Ds) • Left Ventricle Length (LVLd, LVLs) • Left Ventricle Outflow Tract Diameter (LVOT Diam) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Length (LV Major) • Left Ventricle Width (LV Minor) • Left Ventricle Outflow Tract Area (LVOT) • Left Ventricle Mass Index (LVPWd, LVPWs) • Ejection Fraction, Teichholz/Cube (LVIDd, LVIDs) • Left Ventricle Posterior Wall Fractional Shortening (LVPWd, LVPWs) • Mitral Valve • Mitral Valve Annulus Diameter (MV Ann Diam) • E-Point-to-Septum Separation (EPSS) • Mitral Valve Area Planimetry (MVA Planimetry) |
| Pulmonic valve | <ul style="list-style-type: none"> • Pulmonic Diameter (Pulmonic Diam) |
| Right ventricle | <ul style="list-style-type: none"> • Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) |
| System inferior vena cava | Systemic Vein Diameter (Systemic Diam) |

| 11.09.02 M-Mode measurements | |
|------------------------------|---|
| Aorta | <ul style="list-style-type: none"> • Aortic Root Diameter (Ao Root Diam) • Aortic Valve Diameter (AV Diam) • Aortic Valve Cusp Separation (AV Cusp) • Aortic Valve Ejection Time (LVET) |
| Left atrium | <ul style="list-style-type: none"> • Left Atrium Diameter to AoRoot Diameter Ratio (LA/Ao Ratio) • Left Atrium Diameter (LA Diam) • Left Ventricle Volume, Teichholz/Cubic (LVIDd, LVI Ds) • Left Ventricle Posterior Wall Thickness (LVPWd, LVPWs) • Left Ventricle Ejection Time (LVET) • Left Ventricle Pre-Ejection Period (LVPEP) • Interventricular Septum (IVS) |
| Mitral valve | <ul style="list-style-type: none"> • E-Point-to-Septum Separation (EPSS) • Mitral Valve Anterior Leaflet Excursion (D-E Excursion) • Mitral Valve D-E Slope (D-E Slope) • Mitral Valve E-F Slope (E-F Slope) |
| Pulmonic valve | <ul style="list-style-type: none"> • QRS complex to end of envelope (Q-to-PV close) • Right Ventricle Internal Diameter (RVIDd, RVIDs) • Right Ventricle Outflow Tract Diameter (RVOT Diam) • Right Ventricle Ejection Time (RVET) • Right Ventricle Pre-Ejection Period (RVPEP) |
| Tricuspid valve | <ul style="list-style-type: none"> • QRS complex to end of envelope (Q-to-TV close) |

| 11.09.03 Doppler mode measurements | |
|------------------------------------|--|
| Aortic valve | <ul style="list-style-type: none"> • Aortic Valve Mean Velocity (AV Trace) • Aortic Valve Velocity Time Integral (AV Trace) • Aortic Valve Mean Pressure Gradient (AV Trace) • Aortic Valve Peak Pressure Gradient (AR Vmax) • Aortic Insufficiency Peak Velocity (AR Vmax) • Aortic Insufficiency End-Diastolic Velocity (AR Trace) • Aortic Valve Peak Velocity (AV Vmax) • Aortic Valve Deceleration Time (AV Trace) • Aortic Valve Ejection Time (AVET) • Aortic Valve Area according to PHT |



11. Measurements/calculations (cont.)

11.09.03 Doppler mode measurements (cont.)

| | |
|----------------|--|
| Left ventricle | <ul style="list-style-type: none"> • Left Ventricle Outflow Tract Peak Pressure Gradient (VLOT Vmax) • Left Ventricle Outflow Tract Peak Velocity (LVOT Vmax) • Left Ventricle Outflow Tract Mean Pressure Gradient (LVOT Trace) • Left Ventricle Outflow Tract Velocity Time Integral (LVOT Trace) • Left Ventricle Ejection Time (LVET) |
|----------------|--|

| | |
|--------------|---|
| Mitral valve | <ul style="list-style-type: none"> • Mitral Valve Regurgitant Mean Velocity (MR Trace) • Mitral Regurgitant Mean Pressure Gradient (MR Trace) • Mitral Regurgitant Velocity Time Integral (MR Trace) • Mitral Valve Mean Velocity (MR Trace) • Mitral Valve Velocity Time Integral (MR Trace) • Mitral Valve Mean Pressure Gradient (MR Trace) • Mitral Regurgitant Peak Pressure Gradient (MR Vmax) • Mitral Valve Peak Pressure Gradient (MR Vmax) • Mitral Regurgitant Peak Velocity (MR Vmax) • Mitral Valve Peak Velocity (MR Vmax) • Mitral Valve Velocity Peak A (MV A Velocity) • Mitral Valve Velocity Peak E (MV E Velocity) • Mitral Valve Area according to PHT (MV PHT) • Mitral Valve E-Peak to A-Peak Ratio (A-C and D-E) (MV E/ARatio) • Mitral Valve Acceleration Time (MV ACC Time) • Mitral Valve Deceleration Time (MV Dec. Time) • Mitral Valve Acceleration Time/Deceleration Time Ratio (MVAcc/Dec. Time) |
|--------------|---|

11.09.03 Doppler mode measurements (cont.)

| | |
|----------------|---|
| Pulmonic valve | <ul style="list-style-type: none"> Gradient (PR Vmax) • Pulmonic Insufficiency End-Diastolic Pressure Gradient (PRTrace) • Pulmonic Valve Peak Pressure Gradient (PV Vmax) • Pulmonic Insufficiency Peak Velocity (PR Vmax) • Pulmonic Insufficiency End-Diastolic Velocity (Prend Vmax) • Pulmonic Valve Peak Velocity (PV Vmax) • Pulmonary Artery Diastolic Pressure (PV Trace) • Pulmonic Insufficiency Mean Pressure Gradient (PR Trace) • Pulmonic Insufficiency Peak Pressure • Pulmonic Valve Mean Pressure Gradient (PV Trace) • Pulmonic Insufficiency Mean Square Root Velocity (PR Trace) • Pulmonic Insufficiency Velocity Time Integral (PR Trace) • Pulmonic Valve Mean Velocity (PV Trace) • Pulmonic Valve Velocity Time Integral (PV Trace) • Pulmonic Insufficiency Pressure Half Time (PR PHT) • Pulmonic Valve Flow Acceleration (PV Acc Time) • Pulmonic Valve Acceleration Time (PV Acc Time) • Pulmonic Valve Ejection Time (PVET) • QRS complex to end of envelope (Q-to-PV close) • Pulmonic Valve Acceleration to Ejection Time Ratio (PV AccTime, PVET) |
|----------------|---|

| | |
|-----------------|--|
| Right ventricle | <ul style="list-style-type: none"> • Right Ventricle Outflow Tract Peak Pressure Gradient (RVOT Vmax) • Right Ventricle Outflow Tract Peak Velocity (RVOT Vmax) • Right Ventricle Outflow Tract Velocity Time Integral (RVOT Trace) • Right Ventricle Ejection Time (RV Trace) • Stroke Volume by Pulmonic Flow (RVOT Planimetry, RVOT Trace) • Right Ventricle Stroke Volume Index by Pulmonic Flow (RVOT Planimetry, RVOT Trace) |
|-----------------|--|



11. Measurements/calculations (cont.)

11.09.03 Doppler mode measurements (cont.)

| | |
|-----------------|--|
| System | <ul style="list-style-type: none"> • Pulmonary Artery Peak Velocity (PV Vmax) • Pulmonary Vein Velocity Peak A (reverse) (P Vein A) • Pulmonary Vein Peak Velocity (P Vein D, P Vein S) • Systemic Vein Peak Velocity (PDA Diastolic, PDA Systolic) • Ventricular Septal Defect Peak Velocity (VSD Vmax) • Atrial Septal Defect (ASD Diastolic, ASD Systolic) • Pulmonary Vein A-Wave Duration (P Vein A Dur) • IsoVolumetric Relaxation Time (IVRT) • IsoVolumetric Contraction Time (IVCT) • Pulmonary Vein S/D Ratio (P Vein D, P Vein S) • Ventricular Septal Defect Peak Pressure Gradient (VSD Vmax) • Pulmonic-to-Systemic Flow Ratio (Qp/Qs) |
| Tricuspid valve | <ul style="list-style-type: none"> • Tricuspid Regurgitant Peak Pressure Gradient (TR Vmax) • Tricuspid Valve Peak Pressure Gradient (TV Vmax) • Tricuspid Regurgitant Peak Velocity (TR Vmax) • Tricuspid Valve Peak Velocity (TV Vmax) • Tricuspid Valve Velocity Peak A (TV A Velocity) • Tricuspid Valve Velocity Peak E (TV E Velocity) • Tricuspid Regurgitant Mean Pressure Gradient (TR Trace) • Tricuspid Valve Mean Pressure Gradient (TV Trace) • Tricuspid Regurgitant Velocity Time Integral (TR Trace) • Tricuspid Valve Mean Velocity (TV Trace) • Tricuspid Valve Velocity Time Integral (TV Trace) • Tricuspid Valve Time to Peak (TV Acc/Dec Time) • Tricuspid Valve Ejection Time (TV Acc/Dec Time) • Tricuspid Valve A-Wave Duration (TV A Dur) • QRS complex to end of envelope (Q-to-TV close) • Tricuspid Valve Pressure Half Time (TV PHT) • Tricuspid Valve E-Peak to A-Peak Ratio (TV E/A Velocity) |

11.09.04 Color Flow mode measurements

| | |
|--------------|--|
| Aortic valve | <ul style="list-style-type: none"> • Proximal Isovelocity Surface Area: Regurgitant Flow (AR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (AR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (AR Vmax) |
| Mitral valve | <ul style="list-style-type: none"> • Proximal Isovelocity Surface Area: Regurgitant Flow (MR Trace) • Proximal Isovelocity Surface Area: Regurgitant Volume Flow (MR Trace) • Proximal Isovelocity Surface Area: Aliased Velocity (MR Vmax) |

11.09.05 Combination mode measurements

| | |
|----------------|---|
| Aortic valve | <ul style="list-style-type: none"> • Aortic Valve Area (Ao Diam., LVOT Vmax, AV Vmax) • Aortic Valve Area by Continuity Equation by Peak Velocity (Ao Diam, LVOT Vmax, AV Vmax) • Stroke Volume by Aortic Flow (AVA Planimetry, AV Trace) • Cardiac Output by Aortic Flow (AVA Planimetry, AV Trace, HR) • 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 | <ul style="list-style-type: none"> • Stroke Volume by Mitral Flow (MVA Planimetry, MV Trace) • Cardiac Output by Mitral Flow (MVA Planimetry, MV Trace, HR) |

11.09.06 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



12. Probes

12.01 4C-RS

Convex probe

| | |
|----------------------------|--------------------------------------|
| Applications | Abdomen, OB/GYN, vascular, urology |
| Number of elements | 128 |
| Convex radius | 60 mmR |
| 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, 3.6 MHz |
| Biopsy guide | Multi-angle, reusable bracket |

12.02 L6-12-RS

Linear probe

| | |
|----------------------------|-----------------------------------|
| Applications | Vascular, small parts, pediatrics |
| 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 |

12.03 L8-18i-RS

Linear probe

| | |
|----------------------------|---------------------------|
| Application | MSK superficial |
| 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, 18.0 MHz |
| CFM/PDI/PWD frequency | 6.7, 8.3, 10 MHz |
| Steered angle | ±20° |
| Biopsy guide | Not available |

12.04 12L-RS

Linear probe

| | |
|----------------------------|--|
| Applications | Vascular, small parts, pediatrics, MSK |
| 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 |

12.05 LK760-RS

Linear probe

| | |
|----------------------------|--------------------|
| Application | 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 |

12.06 E8C-RS

Endo micro convex probe

| | |
|----------------------------|---|
| Applications | OB/GYN, urology, transvaginal, transrectal |
| Number of elements | 128 |
| Convex radius | 10.73 mmR |
| 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 |



12. Probes (cont.)

12.07 E8Cs-RS

Endo micro convex probe

| | |
|----------------------------|---|
| Applications | OB/GYN, urology, 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 |

12.08 BE9CS-RS

Simultaneous bi-plane, micro convex probe

| | |
|----------------------------|---|
| Applications | Urology, transrectal |
| Number of elements | 96 |
| Convex radius | 9 mm |
| FOV | 133° |
| Footprint | 19 x 18.7 mm |
| B-Mode imaging frequency | 6.0, 8.0, 10.0 MHz |
| Harmonic imaging frequency | 8.0, 9.0, 10.0 MHz |
| CFM/PDI/PWD frequency | 4.0, 5.0, 6.3 MHz |
| PW frequency | 4.2, 5.0, 6.3 MHz |
| Biopsy guide | Fixed angle, disposable or reusable bracket |

12.09 8C-RS

Micro convex probe

| | |
|----------------------------|-------------------------|
| Application | Pediatrics |
| Number of elements | 128 |
| Convex radius | 10.73 mmR |
| 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 |

12.10 3Sc-RS

Phased array sector probe

| | |
|----------------------------|-------------------------------|
| Applications | Cardiac, transcranial |
| 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 |

12.11 6S-RS

Phased array sector probe

| | |
|----------------------------|------------------------|
| Applications | Cardiac, transcranial |
| 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 | 3.0, 4.0, 4.5 MHz |
| Biopsy guide | Not available |

12.12 12S-RS

Phased array sector probe

| | |
|----------------------------|--------------------------|
| Applications | Neonatal, 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 | 4.5, 5.0, 5.6, 6.7 MHz |
| CW frequency | 4.2, 5.0, 6.2 MHz |
| Biopsy guide | Not available |



12. Probes (cont.)

12.13 RAB2-6-RS

Convex Volume Probe

| | |
|----------------------------|---------------------------------|
| Applications | Abdomen, OB/GYN, urology |
| Number of Elements | 128 |
| Convex radius | 47.1 mmR |
| Footprint | 62.2 x 34.0 mm |
| Volume sweep radius | 24.11 mm |
| FOV | 70 (B), 84° x 70° (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, 3.0, 4.0 MHz |
| Biopsy guide | Multi-angle, reusable bracket |

12.14 RIC5-9A-RS

Convex Volume Probe

| | |
|----------------------------|--|
| Applications | OB/GYN, urology, transvaginal, transrectal |
| Number of elements | 192 |
| Convex radius | 10.1 mmR |
| Footprint | 20.96 x 23.39 mm |
| FOV | 146° (B), 84° x 146° (volume scan) |
| B-Mode imaging frequency | 5.0, 7.0, 9.0 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. Inputs and outputs

CVBS output (RCA)

S-Video output

VGA output (1920 x 1080 resolution)

HDMI output (1920 x 1080 resolution)

Audio line-out (RCA)

Ethernet (RJ45)

USB (3x in rear, 1 beside touch panel)

14. Safety conformance

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

Conforms to the standards for safety

- IEC 60601-1 Medical electrical equipment – Part 1: General requirements for safety (basic safety and essential performance)
- IEC 60601-1-2 Medical electrical equipment – Part 1-2: General requirements for safety (basic safety and essential performance) – Collateral Standard: Electromagnetic disturbances – requirements and tests EMC Emissions Group 1 Class A device requirements as per CISPR 11
- IEC 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the safety (basic safety and essential performance) of ultrasonic medical diagnostic and monitoring equipment
- ISO 10993-1 Biological evaluation of medical devices – Part 1 Evaluation and testing
- EN 62366 Medical devices – Application of usability engineering to medical devices

Imagination at work

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