



SAMSUNG MEDISON

HS50

Data Sheet

V2.00

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Rev01

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SPECIFICATION SUMMARY

PHYSICAL SPECIFICATION

- Height: 1,335 ~ 1,710mm (with monitor)
- Width: 530 mm
- Depth: 750 mm
- Weight: 79.8 Kg (without accessories)
- Weight: Approx. 100 Kg (with Safe Working Load)

IMAGING MODES

- 2D-Mode
- M-Mode
- Color M-Mode
- Anatomical Mode
- Color Doppler Mode
- Pulsed Wave (PW) Spectral Doppler Mode
- Continuous Wave (CW) Doppler Mode
- Tissue Doppler Imaging (TDI) Mode
- Tissue Doppler Wave (TDW) Mode
- Power Doppler (PD) Mode
- ElastoScan Mode
- 3D/4D/XI STIC imaging Mode
- Dual Mode
- Quad Mode
- Combined Mode
- Simultaneous Mode
- Zoom Mode
- S-Flow Mode

FOCUSING

- Transmit focusing, maximum of eight points (four points simultaneously selectable)
- Digital dynamic receive focusing (continuous)

PROBE CONNECTIONS

- 3 or 4 Probe Connectors (Selectable)
- CW Probe Connector (Optional)

MONITOR

- Main Monitor
 - Resolution: 1,920 x 1,080
 - 21.5 Inch LED Monitor
- Touch Screen Monitor
 - Resolution: 1,280 x 800
 - 10.1 Inch LED Monitor

ECG

- USB Type (Type CF)

IMAGE STORAGE

- Maximum 45,000 Frames for Cine memory
- Maximum 14,000 Lines for Loop memory
- Image filing system

REAR PANEL INPUT/OUTPUT CONNECTIONS

- Audio Output Port (Right/Left)
- VGA monitor
- S-Video Output
- LAN
- USB Port
- HDMI Output
- MIC

AUXILIARY

- DVD Multi-Drive
- Digital B/W Video Printer
- Digital Color Video Printer
- USB Printer
- DVD Recorder
- Foot switch (IPX8)
- USB Flash Memory Media
- USB HDD
- USB ECG
- Monitor

USER INTERFACE

- English, German, French, Spanish, Italian, Portuguese

ELECTRICAL PARAMETERS

- 100-240 VAC, 800 VA, 50/60 Hz
- Battery: 14.4VDC, 6900mAh, 99.36Watt (Optional)

PRESSURE LIMITS

- Operating: 700 hPa to 1,060 hPa
- Storage: 700 hPa to 1,060 hPa

HUMIDITY LIMITS

- Operating: 30 % to 75 %
- Storage & Shipping: 20 % to 90 %

TEMPERATURE LIMITS

- Operating: 10 °C to 35 °C
- Storage & Shipping: -25 °C to 60 °C

GENERAL SPECIFICATION

- Tilt: + 25 ° / - 70 °
- Lift: 180 mm

PHYSICAL SPECIFICATION

- Height: 1,335 ~ 1,710mm (with monitor)
- Width: 530 mm
- Depth: 750 mm
- Weight:
 - 79.8Kg (without accessories)
 - Approx. 100 Kg (with safe working load)

CONSOLE DESIGN

- 3 or 4 Active Probe Ports (Optional)
- 4 Swivel Wheel Cart Based Type
- Articulated Monitor Arm
- Built-in Printer Storages
- Ergonomic Operation Panel
- Touch Screen
- Alpha-Numeric Keyboard
- Trackball
- Probe Holder / Gel Holder
- Front and Rear Handles
- Integrated PC Module
- Integrated SSD
- Windows Embedded Standard 7
- ODD (Optional)
- Gel Warmer (Optional)
- ECG (Optional)

MAIN MONITOR

- 21.5 Inches High Resolution LED Monitor
- Resolution: 1,920 x 1,080 (16:9)
- Number of Color: 16.7 M
- Brightness Adjustment
- Interactive Dynamic Software Menu
- Articulated Monitor Arm
 - Swivel: +/- 160 °

CONTROL PANEL

- Touch Screen
 - 10.1 Inches High Resolution LED Monitor
 - Resolution: 1,280 X 800
 - Capacitive Touch Type
 - Virtual Alpha Numeric KBD
- Alpha-Numeric KBD
- 6 User Keys
- Tri-Status backlit
- 6 Probe Holders
- Height Adjustment: 180 mm
- Swivel : +/-30°

PC

- Main Processor: Intel i3-4100E 2.4GHz
- Main Memory: 8 GB
- Built-in SSD: 512GB

ELECTRICAL SPECIFICATIONS

- Frequency: 50/60 Hz
- Voltage: 100 ~ 240 VAC
- Power Consumption: Max. 800 VA with Peripherals
- Heat Dissipation: 2,729.7 [BTU/h]
- System Noise: under 34.8 dB
- Built-in Equipotential Circuit
- Battery(Optional)
 - Scan time: 25 min(Basic mode Live scan)
 - Sleep mode: About 30 sec.(Wake up time)
 - 14.4VDC, 6900mAh, 99.36Watt Lithium-ion Battery
 - Charging time: About 5 Hours

SYSTEM SPECIFICATION

APPLICATIONS

- Abdomen
- Cardiac
- Gynecology
- MSK
- Obstetrics
- Pediatric
- Small Parts
- Urology
- Vascular

PRESETS

- Abdomen
- Adult Echo
- Adnexa
- Aorta
- Aortic Arch
- Arterial
- Bladder
- Bowel
- Breast
- Carotid
- Deep
- Fetal Heart
- General
- Neo Head
- NT
- Ped Abd
- Ped Echo
- Ped Hip
- Prostate
- Renal
- Spine
- Superficial
- Thyroid
- Testicle

- TCD
- Uterus
- Venous
- 1st Trimester
- 2nd Trimester
- 3rd Trimester

OPERATION MODE

- B-Mode (2D)
- Color Doppler Mode (C)
- Pulse Wave Doppler (PWD)
- Continuous Wave Doppler(CWD): Steered / Static
- Power Doppler Mode (PD)
- S-Flow™ Mode
- M-Mode (M)
- Anatomical M Mode
- Single/Dual/Quad Mode
- Volume Mode
 - 3D / 4D / 3D XI / XI STIC™
- TDI/TDW
- ElastoScan Mode

DISPLAY MODE

- Dual Mode
 - B+B, B+B/C, B+B/PD, B+B/S-Flow
 - ElastoScan + ElastoScan
- Dual Live Mode
 - B+B, B+B/C, B+B/PD, B+B/S-Flow
 - B+ElastoScan
- Real-Time Triplex Mode (Simultaneous Mode)
 - B+C+PW, B+PD+PW, B+S-Flow+PW, B+TDI+TDW
- Duplex, Triplex Mode
 - B+C, B+M, B+3D, B+4D, B+PW, B+PD, B+S-Flow, B+CW, B+C+PW, B+C+CW, B+C+M, B+ElastoScan, B+TDI, B+TDW
- Quad Mode

- Combinations of B/B, B/C, B/PD and B/S-Flow, ElastoScan
- Zoom Mode
 - Write Zoom / Read Zoom / Pen zoom/ Panning
- Needle Mate+
- Panoramic
- Trapezoid

TRANSDUCER TYPES

- Linear Array: LA3-14AD, LA3-16A
- Curved Array: CA1-7AD, CA2-9AD
- Endo-Cavity: ER4-9, EVN4-9
- Micro-Convex Array: CF4-9, CA2-6BM
- Phased Array: PE2-4, PA3-8B, PA4-12B
- Pencil: DP2B, CW6.0
- TEE: MMPT3-7
- Volume Probe (3D mechanical probe)
 - Curved Volume: CV1-8AD
 - Endo-Cavity Volume: V5-9

SYSTEM STANDARD FEATURES

- Hybrid Full Digital Beam-forming
- Frequency Range: 1 ~ 18MHz
- Displayed Imaging Depth (Probe dependent)
 - Minimum Depth of Field: 2cm
 - Maximum Depth of Field: 38cm
- Number of Focal Points: 1 ~ 4
- Transmission Focal Zone Position selection
 - 1 ~ 8 Focal Points Selectable
 - (Probe and Application dependent)
- Continuous Dynamic Receive Focus / Aperture
- Multi-frequency / Wideband Technology
- S-View Technology
- Frequency Compounding (FSI)
- ClearVision
- 256 Shades of Gray
- System Internal Dynamic Range: 256
- Maximum Frame Rate

- 2,000 fps (Hz)
- Maximum Color Frame Rate
 - 400 fps (Hz)
- Image Reverse: Right/Left, Up/Down
- Image Rotation: 90°, 180°, 270°
- Pre Processing
- Post Processing
- Digital Calipers / Measurement
- Cine Memory
 - Capacity: 500 MB
 - Cine loop: Max. 14,000 Lines
 - Image storage: Max. 45,000 Frames / 60 Sec
- QuickScan™
- Report Package
- Body Marker
- System Boot up: Max. 90 Sec
- Probe Change: 2-3 Sec
- User Programmable Preset : Over 30 Presets
- User Programmable Key: 6 Keys
- Touch Screen Menu Editable Function
- SonoView™
- Data Backup / Restore
- Image Exporting and Importing
- PW Velocity Range: 0.1cm/s ~ 8.8m/s
- CW Velocity Range: 1cm/s ~ 19.3m/s

SYSTEM OPTIONS

- 4D
- 3D XI™
- Auto IMT+
- Cardiac Measurement
- CW Function
- DICOM 3.0
- ElastoScan
- EZ Exam+
- Mobile export
- Needle Mate+

- | | |
|---|---------------------------------------|
| ▪ Panoramic | - Birth / Age |
| ▪ 5D NT | - Accession Number |
| ▪ 5D Follicle | - Diag. Physician |
| ▪ RealisticVue | - Ref. Physician |
| ▪ XI STIC | - Operator |
| ▪ DVD-RW | - Indication |
| ▪ ECG (AHA / IEC) | - Study Information |
| ▪ Foot Switch | - E-mail |
| ▪ Gel Warmer | ▪ Gestational Age: LMP/EDD/GA |
| ▪ Printer Tray (Large / Small) | ▪ Institute |
| ▪ 3P connector PSA | ▪ Operator |
| ▪ 3P Connector PSA (with Pencil Probe Port) | ▪ Probe Name |
| ▪ 4P Connector PSA | ▪ Probe Orientation |
| ▪ 4P Connector PSA (with Pencil Probe Port) | ▪ Depth / Width |
| ▪ SEE Stream (Russia only) | ▪ Focal Zone |
| ▪ 2D NT | ▪ Focal Number |
| ▪ E-Strain | ▪ TGC Line |
| ▪ Strain+ | ▪ FPS (Hz) |
| ▪ Stress Echo | ▪ Frequency |
| ▪ BatteryAssist | ▪ Gain |
| | ▪ Dynamic Range |
| | ▪ Map |
| | ▪ Frame Average |
| | ▪ Power |
| | ▪ ClearVision Index |
| | ▪ MultiVision Index |
| | ▪ Gray Bar |
| | ▪ Acoustic Index: TIs, Tib, Tic |
| | ▪ Mechanical Index: MI |
| | ▪ Caliper & Measurement Result |
| | ▪ Indicator |
| | ▪ Pointer |
| | ▪ Body Marker |
| | ▪ ROI Position / ROI Size |
| | ▪ Wall filter |
| | ▪ Zoom / Panning |
| | ▪ Biopsy Guide Line (Probe dependent) |

DISPLAY

- | | |
|---------------------------------------|--|
| ▪ Application | |
| ▪ Preset | |
| Mode | |
| ▪ Date: 3 types (Selectable) | |
| - YYYY-MM-DD | |
| - MM-DD-YYYY | |
| - DD-MM-YYYY | |
| ▪ Time: 2 types (Selectable) | |
| - 24 hours | |
| - 12 hours | |
| ▪ Patient (General Information) | |
| - Patient ID | |
| - Patient Name (First, Middle & Last) | |
| - Gender: Female, Male, Other | |

LANGUAGE

- Display Language
 - English, French, German, Italian, Spanish, Portuguese, chinse
- Input Language
 - English, French, Italian, German, Spanish, Russian, chinse, Nordic (Norwegian, Finnish, Swedish, Danish)

OPERATING ENVIRONMENT

- Temperature: 10 °C ~ 35 °C
- Humidity: Up to 90%
- Pressure: 700 ~ 1060 hPa

PROCESSING

DATA PROCESSING

- System Processing Channel: 573,440
- Raw Data Image Analysis
- Cine
 - Function: save / review / play / stop / pause / export / Trim Start / Trim End
- Clipboard: displays thumbnail images of the acquired data for the current exam
- Enlarged Preview of the image
- Image Archive / Connectivity
- Image format: AVI, MPEG, JPEG, BMP, TIFF, DICOM
- Image Viewer (Sonoview™)
- Measurements, Calculations and Annotations on CINE Playback
- Number of Image Storage (built-in SSD): max. 350,000 images (RAW format)
- Image Preview
- Cine Image Preview
- Recalling Image from the Clipboard
- Scrolling Timeline Memory

- Start and End Frame Selections for Loop Playback

PRE-PROCESSING

- B/M-Mode
 - Dynamic Range
 - Frame Average
 - Frequency
 - Gain
 - Harmonic
 - Pulse Inversion Harmonic (Probe dependent)
 - Line Density
 - Power
 - Reject
 - Scan Area
 - TGC
 - Write Zoom
 - MultiVision (Probe Dependent)
 - Beam Steering (Probe Dependent)
 - Trapezoid (Probe Dependent)
 - Free Angle Plane
- PW Mode
 - Filter
 - Frequency
 - Gain
 - Power
 - PRF (Scale)
 - Sample Volume Angle
 - Sample Volume Position
- CW Mode
 - Sample Rate
 - Filter
 - Gain
 - Power
 - Sample Volume Angle
 - Sample Volume Position
- Color Doppler / Power Doppler mode

- Filter
- Frame Average
- Frequency
- Gain
- Line Density
- Power
- PRF (Scale)
- Smoothing
- Sensitivity
- Steer Angle
- 3D / 4D Mode
 - Scan Quality
 - Volume Angle
- ElastoScan Mode
 - Frame Average
 - Frequency
 - Line Density
- Read Zoom
- Sound
- Trace Direction
- Trace Method
- Color Doppler / Power Doppler Mode
 - Balance
 - Baseline
 - Chroma Map
 - Color Map
 - Hide Color
 - Invert
 - Read Zoom
- 3D Mode
 - 3D
 - 3D XI™
 - Accept ROI
 - Chroma Map
 - MagiCut™
 - VOCAL™
 - XI VOCAL™
 - 5D NT
 - XI STIC™
- ElastoScan Mode
 - E-Gain
 - Contrast
 - Color Map
 - Alpha Blending
 - Blending Level
 - Enhancement

POST-PROCESSING

- B-Mode
 - Chroma Map
 - Gray Map
 - Image Size
 - Read Zoom
 - ClearVision
 - Sweep Speed
- M-Mode
 - Chroma Map
 - M Mode Map
 - Read Zoom
 - Sweep Speed
- PW / CW Mode
 - Base line
 - Chroma Map
 - Doppler Map
 - Invert

CONNECTIVITY

DICOM

- DICOM 3.0
- DICOM Media
- DICOM Performed Procedure Step (PPS)

- DICOM Print
- DICOM Storage
- DICOM Storage Commitment (SC)
- DICOM Structured Reporting (SR)
- DICOM Verification
- DICOM Worklist
- Gray Scale Converting
- Multi Frame
- Single Frame
- 3D Volume Frame
- Transfer Mode
 - Send after acquisition
 - Send on end exam
 - Send manually
- VOI LUT Setup

Sony UP-D898MD, Sony UP-X898MD, Mitsubishi P95DE, Mitsubishi P95DW

- Digital Color Video Printer: Sony UP-D25MD, Mitsubishi CP30DW

- USB Line Printer: Samsung CLP-620NDK, ML-2950

IHE

- Scheduled Workflow (SWF)
- Patient Information Reconciliation (PIR)
- Portable Data for Imaging (PDI)
- Evidence Documents (ED)

PERIPHERAL INTERFACE

- Audio out L/R
- D-SUB output
- S-Video output
- HDMI output
- USB 2.0 (6 ports)
- Ethernet 10/100/1000BASE-T
- Foot Switch: USB 2.0 (IPX 8)
- DVD Recorder: Sony DVO-1000MD
 - S-video, NTSC/PAL
 - Recording only
- Printers
 - Digital BW Video Printer: Sony UP-D897,

SCANNING PARAMETERS

2D MODE

- Angle Steering: 0°, +/-7°, +/- 12°
- Chroma Map: off, 1 ~ 11
- Cine Play: On, Off
- Cine Speed: 6, 12, 25, 50, 100, 150, 200, 300
- Depth: 2cm ~ 38cm (Probe dependent)
- Dual Live
- Dynamic Range: 30 ~ 256
- Flip: L/R, U/D
- Focus Number: 1 ~ 4
- Frequency Compounding
- Frequency: 3 ~ 5 steps (Probe Dependent)
 - Pen, Gen1, Gen2, Res1, Res2
- Gain: 0 ~ 100
- Gray Map: 1 ~ 12
- Harmonic: On, Off
- Image Size: 70 ~ 100%
- Line Density: Low, Med, High
- Number of TGC Level: 8

- Frame Average: 0 ~ 9
- Power: 2 ~ 100
- Pulse Inversion Harmonic: On, Off (Probe dependent)
- QuickScan™
- Reject Level: 0 ~ 30
- MultiVision Index: Off, Low, Med, High
- ClearVision Index: Off, 1 ~ 5
- Trapezoid: On, Off (Linear Probes only)
- Scan Area: 40 ~ 100%
- Zoom
 - Read Zoom: 100 ~ 800 %
 - Write Zoom
- Panning
- Free Angle Plane

M MODE

- Chroma Map: Off, 1 ~ 11
- Display format
 - M-mode only
 - Up/down, Side by side
 - Size: 50/50, 70/30, 30/70
- Dynamic Range: 30 ~ 256
- Gain: 0 ~ 100
- M Mode Map: 1 ~ 12
- Power: 2 ~ 100
- QuickScan™: Off, On, Update
- Sweep Speed
- Color M
- Anatomical M

COLOR MODE

- Balance: 0 ~ 16
- Baseline: -8 ~ 8
- Color Map: 1 ~ 12
- Line Density: Low, Med, High
- Dual Live: On, off

- Sensitivity: 0 ~ 5
- Frame Average: 0 ~ 5
- Frequency: 2 steps
- Gain: 0 ~ 100
- Hide Color: On, Off
- Invert: On, off
- Frame Average: 0 ~ 10
- Power: 2 ~ 100
- PRF: 0.1kHz ~ 19.5kHz (Probe dependent)
- Sensitivity: 0 ~ 5
- Smoothing: 0 ~ 5
- Steer Angle: 0°, ±15°, ±20°, ±30°
- Velocity
- Filter: 1 ~ 4
- Vel + Variance Map

PWD MODE

- Auto Calc: Off, Live, Frozen
- Base Line: -8 ~ 8
- Chroma Map: Off, 1 ~ 11
- Display format: Up/down, Side by side, Doppler Only
- Display Size: 70/30, 50/50, 30/70
- Doppler Map: 1 ~ 12
- Dynamic Range: 30 ~ 256
- Frequency: 2 Steps
- Gain: 0 ~ 100
- Invert: On, Off
- Power: 2 ~ 100
- PRF: 1.0 ~ 22.5 kHz (Probe dependent)
- QuickScan™: On, update
- Simultaneous: On, Off
- Sound: 0 ~ 100
- Angle Correction: -80° ~ 80°
- SV Position control
- SV Size: 0.5 ~ 25mm
- Quick Angle: 0°, 60°, -60°

- Sweep Speed: 15 ~ 117 mm/s
- Trace
 - Method: Off, Mean, Max
 - Trace Direction: Both, Above, Below
- Update
- Filter: 1 ~ 4

CWD MODE

- Auto Calc.: Off, Live, Frozen
- Base line: -8 ~ 8
- Chroma Map: Off, 1 ~ 11
- Display Format: Up/down, Side by side, Doppler Only
- Display Size: 70/30, 50/50, 30/70
- Doppler Map: 1 ~ 12
- Dynamic Range: 30 ~ 256
- Gain: 0 ~ 100
- Invert: On, Off
- Power: 2 ~ 100
- Sample Rate: 1.8kHz ~ 57kHz (probe dependent)
- QuickScan™: On, update
- Sound: 0 ~ 100
- Angle Correction: -80° ~ 80°
- SV Position Control
- Quick Angle: 0°, 60°, -60°
- Sweep Speed: 18 ~ 142 mm/s
- Trace
 - Method: Off, Mean, Max
 - Direction: Both, Above, Below
- Filter: 1 ~ 4

PD MODE

- Balance: 0 ~ 16 step
- Color Map: 1 ~ 12
- Line Density: Low, Med, High
- Dual Live: On, off
- Filter: 1 ~ 4

- Frame Average: 0 ~ 5 step
- Frequency: 2 steps (probe dependent)
- Gain: 0 ~ 100
- Hide Color
- Invert: On, Off (S-Flow™ only)
- Power: 2 ~ 100
- PRF: 0.1 ~ 19.5 kHz (Probe dependent)
- Sensitivity: 0 ~ 5
- Smoothing: 0 ~ 5
- Steer Angle: 0°, +/-15°, +/-20°, +/-30°
- Filter: 1 ~ 4

3D/4D MODE

- 3D
- 4D (Live 3D)
- Color 3D
- 3D XI™
 - MSV
 - Oblique View™
 - XI VOCAL™
- 5D NT
- MagiCut™
- Orientation Help
- Curved ROI
- 3D Cine
 - Rotation Angle: 30°/45°/60°/90°/180°/360°
 - Step Angle: 1°/3°/5°/15°
- 4D Cine
 - Cine Type: Volume, Image
 - Layout
 - Play Mode: Loop, Yoyo
 - Speed: Very Slow, Slow, Normal, Fast, Fastest
 - Trim Start, Trim End
 - Volume Index
- MPR
 - 2D

- Render	- Step Angle: 12° / 18° / 30°
- Accept ROI	- Start
- Init	- Pole 1 / Pole2
- Layout	■ XI VOCAL™
- Ref. Image: A/B/C/OH	- Solid / Cystic / General / Manual
- 3D Rotation: -90°/90°/180°	- Init
- Select	- Ref. Image: A / B / C / Ref. Contour
- Position	- Slice Direction
- Bias	- Start
- Mix	- Number of Slice
- Vol. Index	■ Chroma Map
- Th. Low	- 2D Chroma Map: Map 1 ~ Map 10
- Transparency	- 3D Chroma Map: Map 1 ~ Map 10
■ MSV	■ Post Processing
- Layout	- Negative / Auto Contrast / Threshold / Sharpen / 3D CI
- Ref. Image: A / B / C / MSV OH	■ Preset (Probe dependent)
- Page	- Default / Surface / Skeleton / Extremity / Brain /
- Init	User1~3
- Orientation Dot	- Load / Save / Rename / Reset
- Position	■ ROI Size / ROI Position
- Bias	■ Rendering Preset: Default / Surface / Skeleton /
- Selected Slice	Extremity / Brain / User1~3
- Vol. Index	■ Scan Quality: Low, Med1, Med2, High
- Slice Thick.	■ Volume Angle: 10 ~ 90 (Probe dependent)
- Ruler	■ XI STIC™
■ Oblique View™	- Scan Time (7 ~ 15 sec)
- Layout	- Trimester (1Trim, 2Trim, 3Trim)
- Auto Increment	- Speed (Very Slow, Slow, Normal, Fast, Fastest)
- OVIX™	- Vol. Index
- Init	■ 5D NT
- Clear Line	■ 5D Follicle
- Cut Type: Line / Contour / Parallel / Plumb	■ RealisticVue
- Image Rotation: -90° / 90° / 180°	- Light direction (9 directions)
■ VOCAL™	- Move light
- Solid / General / Prostate / Cystic / Sphere / Manual	- Set color (Hue, Saturation, Lightness)
- Init	
- Ref. Image: A / B / C	

ELASTOSCAN MODE

- Line Density: Low, Med, High
- Invert: On, off
- Dual Live: On, off
- Frequency
- Gain: 0 ~ 100
- Contrast: 0 ~ 100
- Frame Average: 0 ~ 100
- Color Map: 1 ~ 5
- Alpha Blending: On, off
- Blending Level: 0 ~ 100
- Enhancement: 0 ~ 100

TRANSDUCERS

LINEAR

LA3-14AD

- Center frequency : 7.2MHz
- Band Width : 3 ~ 14 MHz
- Radius of curvature : Flat
- Field of view : 50 mm
- Number of elements : 256
- Biopsy Guide : Available
- Application : Abdomen, MSK, Small Parts, Vascular, OB, GYN, Pediatric
- Safety Class: BF

LA3-16A

- Center frequency : 8.7MHz
- Band Width : 3 ~ 16 MHz
- Radius of curvature : Flat
- Field of view : 38.4 mm
- Number of elements : 192
- Biopsy Guide : Available

- Application : Abdomen, MSK, Small Parts, Vascular, OB, GYN, Pediatric
- Safety Class: BF

CONVEX

CA1-7AD

- Center frequency : 3.2MHz
- Band Width: 1 ~ 7 MHz
- Radius of curvature : 45.692 mm
- Field of view : 70 °
- Number of elements : 160
- Biopsy Guide : Available
- Application : Abdomen, MSK, OB, GYN, Pediatric, Vascular, Urology
- Safety Class: BF

CA2-9AD

- Center frequency : 4.9MHz
- Band Width: 2 ~ 9 MHz
- Radius of curvature : 60.365 mm
- Field of view : 58 °
- Number of elements : 192
- Biopsy Guide : Available
- Application : Abdomen, MSK, OB, GYN, Pediatric, Vascular, Urology
- Safety Class: BF

CF4-9

- Center frequency : 5.65MHz
- Band Width: 4 ~ 9 MHz
- Radius of curvature : 14 mm
- Field of view : 92 °
- Number of elements : 128
- Biopsy Guide : Not available
- Application : Abdomen, MSK, OB, GYN, Pediatric, Vascular, Urology
- Safety Class: BF

CA2-6BM

- Center frequency : 3.5MHz
- Band Width: 2 ~ 6 MHz
- Radius of curvature : 20 mm
- Field of view : 86.08 °
- Number of elements : 144
- Biopsy Guide : Not available
- Application : Abdomen, MSK, OB, GYN, Pediatric, Vascular, Urology
- Safety Class: BF

ENDOCAVITY

ER4-9

- Center frequency: 6.7MHz
- Band Width : 4 ~ 9 MHz
- Radius of curvature : 10.073 mm
- Field of view : 148.092 °
- Number of elements : 128
- Biopsy Guide : Available
- Application : OB, GYN, Urology
- Safety Class: BF

EVN4-9

- Center frequency : 6.65MHz
- Band Width : 4 ~ 9 MHz
- Radius of curvature : 10.073 mm
- Field of view : 148.092 °
- Number of elements : 128
- Biopsy Guide : Available
- Application : OB, GYN, Urology
- Safety Class: BF

VOLUME

CV1-8AD

- Center frequency : 4MHz
- Band Width : 1 ~ 8 MHz
- Radius of curvature : 41.4 mm
- Field of view: 70 °
- Number of elements : 192
- Biopsy Guide : Available
- Application : Abdomen, MSK, OB, GYN, Pediatric, Vascular, Urology
- Safety Class: BF

V5-9

- Center frequency : 5.59MHz
- Band Width: 5 ~ 9 MHz
- Radius of curvature : 10.1 mm
- Field of view : 150.6 °
- Number of elements : 192
- Biopsy Guide : Available
- Application : OB, GYN, Urology
- Safety Class: BF

PHASED ARRAY

PE2-4

- Center frequency :2.7MHz
- Band Width : 2 ~ 4 MHz
- Radius of curvature : Flat
- Field of view : 90 °
- Number of elements : 80
- Biopsy Guide : Not Available
- Application : Abdomen, Cardiac, Vascular, Pediatric
- Safety Class: BF

PA3-8B

- Center frequency : 4.7MHz
- Band Width: 3 ~ 8 MHz
- Radius of curvature : Flat
- Field of view: 90 °
- Number of elements: 96

- Biopsy Guide : Not available
- Application : Abdomen, Cardiac, Vascular, Pediatric
- Safety Class: BF

PA4-12B

- Center frequency : 7MHz
- Frequency Bandwidth : 4 ~ 12 MHz
- Field of view : 90°
- Number of elements : 96
- Biopsy Guide : Not Available
- Application : Cardiac, Pediatric
- Safety Class: BF

PENCIL

CW6.0

- Center frequency : 6.0MHz
- Application : Cardiac, Vascular
- Safety Class : BF

DP2B

- Center frequency : 2.0MHz
- Application : Adult Echo, Ped Echo
- Safety Class : BF

MMPT3-7

- Phased Array (TEE Type)
- Radius of curvature 100mm
- Field of view 90°
- Number of elements 64
- Biopsy Guide Not Available
- Application : Cardiac
- Safety Class BF

- Caliper
- Abdomen
- Cardiac
- Vascular
- Gynecology
- Obstetrics
- Fetal Heart
- Urology
- MSK
- Small Parts
- Pediatric

CALIPER

- **2D Distance**
- M Distance
- **2D Trace**
- **2D Trace length**
- Doppler Manual Trace
- Doppler Limited Trace
- **2 Lines Angle**
- **3 Points Angle**
- **Ellipse (Area / Circumference)**
- **Spline**
- Open Spline
- **Closed Spline**
- **%Stenosis (Diameter)**
- **%Stenosis (Area)**
- **1 Distance Volume**
- **2 Distance Volume**
- **3 Distance Volume**
- **Ellipse Volume**
- **Ellipse + Distance Volume**
- **Disk Volume**
- **Slope**
- **Heart Rate (M, Doppler)**
- **Time (M, Doppler)**

MEASUREMENT

- **Velocity**
- **Acceleration**
- **RI**
- **Volume Flow (Diameter)**
- **Volume Flow (Area)**
- **Auto Trace**
- **Manual Trace**
- **Limited Trace**

ABDOMEN

- Gallbladder
- Pancreas
- Bowel
- Kidney Vol. (Right / Left)
- Liver
- Spleen
- Aorta
- RA (Right / Left)
- Seg. A (Right / Left)
- Arc. A (Right / Left)
- Celiac A
- Splenic A
- Hepatic A (C / R / L)
- Hepatic V (R / M / L)
- Portal V (R / M / L)
- SMA
- IMA
- IVC
- IMV
- SMV

CARDIAC

- LV (2D)
- LV Vol. (Simpson)
- LV Vol. (A/L)
- LV Vol. (Bullet)

- LV Mass
- RV (2D)
- Aorta
- LA
- LA Vol. (Simpson)
- RA
- LVOT
- RVOT
- AV
- MV
- TV
- PV
- Shunt
- IVC
- Tei Index
- Plum. Vein
- Hepatic Vein
- Tissue Doppler
- Qp/Qs
- LV (M)
- RV (M)

CAROTID

- Subclavian A (Right / Left)
- CCA (Right / Left/Prox./Mid./Dist)
- Bulb (Right / Left)
- ICA (Right / Left/Prox./Mid./Dist)
- ECA (Right / Left)
- Vertebral A (Right / Left)

UE ARTERY

- Subclavian A (Right / Left)
- Axillary A (Right / Left)
- Brachial A (Right / Left)
- Radial A (Right / Left)
- Ulnar A (Right / Left)

- SPA (Right / Left)

UE VEIN

- Internal Jugular V (Right / Left)
- Innominate V (Right / Left)
- Subclavian V (Right / Left)
- Axillary V (Right / Left)
- Brachial V (Right / Left)
- Cephalic V (Right / Left)
- Basilic V (Right / Left)
- Radial V (Right / Left)
- Ulnar (Right / Left)

LE ARTERY

- CIA (Left / Right)
- IIA (Left / Right)
- EIA (Left / Right)
- CFA (Left / Right)
- SFA (Left / Right)
- DFA (Left / Right)
- Popliteal A (Left / Right)
- ATA (Left / Right)
- PTA (Left / Right)
- Peroneal A (Left / Right)
- DPA (Left / Right)
- MPA (Left / Right)
- LPA (Left / Right)
- Metatarsal A (Left / Right)
- Digital A (Left / Right)

LE VEIN

- CIV (Left / Right)
- IIV (Left / Right)
- EIV (Left / Right)
- CFV (Left / Right)

- PFV (Left / Right)
- SFV (Left / Right)
- GSV (Left / Right)
- Popliteal V (Left / Right)
- LSV (Left / Right)
- ATV (Left / Right)
- PTV (Left / Right)
- Peroneal V (Left / Right)
- MPV (Left / Right)
- LPV (Left / Right)
- Metatarsal V (Left / Right)
- Digital V (Left / Right)

GYNECOLOGY

- Uterus
- Cervix
- Cyst (Right / Left)
- Ovary (Right / Left)
- Follicles (Right / Left / 1 ~ 12)
- Mass 1 ~ 3
- Ovarian A (Right / Left)
- Uterine A (Right / Left)
- Pericystic Flow
- Endometrial Flow
- Endo. Polyp
- Ovarian Mass (Right / Left)
- Uterine Tumor 1 ~ 3
- Cervical Tumor
- Ectopic Pregnancy

OBSTETRICS

- Fetal Biometry
- Fetal Cranium
- Fetal Long Bone
- Fetal others
- AFI

- CTAR
- Maternal Others
- Ratio
- Umbilical Artery
- Mid Cereb A
- Uterine A (Right / Left)
- Placenta A
- Fetal Carotid (Right / Left)
- Fetal Aorta
- Renal A (Right / Left)
- Duct Venosus
- Fetal HR
- PLI

FETAL HEART

- LV Vol. (Simpson)
- 2D Echo
- CTAR
- MPA
- Duct Artriosus
- IVC
- Duct Venosus
- Asc Aorta
- Dsc Aorta
- MV
- TV
- PLI
- TEI
- Fetal HR
- M Echo

UROLOGY

- WG Prostate
- T-Zone Vol
- Bladder Vol.
- Residual Vol

- Renal Vol. (Right / Left)

BREAST

- Mass 1 ~ 10 (Right / Left)
- Breast Flow (Right / Left)

MSK

- Shoulder (Right / Left)
- Wrist (Right / Left)
- Knee (Right / Left)
- Ankle (Right / Left)

THYROID

- Thyroid Vol. (Right / Left)
- Thyroid Flow (Right / Left)
- Mass 1 ~ 5 (Right / Left)

TESTICLE

- Testis Vol. (Right / Left)
- Epididymis (Right / Left)
- Testis Flow (Right / Left)
- Mass 1 ~ 5 (Right / Left)

SUPERFICIAL

- Superficial Vol (Right / Left)
- Superficial Flow (Right / Left)
- Mass 1 ~ 5 (Right / Left)

PEDIATRIC

- Hip Angle (Right / Left)

SAFETY / EMC

CLASSIFICATIONS

- SAFETY
 - Type of protection against electrical shock: Class I
 - Degree of protection against electrical shock (Patient connection): Type BF or CF Applied Part
- EMC
 - RF Emission CISPR 11: Class A
- Degree of protection against harmful ingress of water: Ordinary equipment (All of applied parts (IPX7) except for ECG, and Foot switch (IPX8))
- RoHS Compliant
- WEEE Compliant

APPLIED STANDARDS

- Safety)
 - IEC/EN 60601-1: Ed. 3.0:2005 + A1:2012
 - IEC/EN 60601-1: Ed. 2.0:1988 + A1:1991 + A2:1995
 - IEC/EN 60601-1-1: Ed. 2.0:2000
 - IEC/EN 60601-1-2: Ed. 2.0:2001 + A1:2004 + Ed. 3.0:2007
 - IEC/EN 60601-1-4: Ed. 1.1:1996 + A1:1999
 - IEC/EN 60601-1-6: Ed. 2.0:2006 + Ed. 3.0:2010
 - IEC/EN 60601-2-37: 2001 + A1:2004 + A2:2005 + Ed. 2.0:2007
 - IEC/EN 60601-2-37: Ed. 1.0:2001 + A1:2004 + A2:2005
 - IEC/EN 62366: Ed. 1.0:2007
- Biocompatibility
 - ISO/EN 10993-1: 2009
- Labeling
 - EN 980: 2008
 - EN 1041: 2008
 - ISO 15223-1: 2012
- NEMA/AIUM
 - NEMA/AIUM UD-2: 2004
 - NEMA/AIUM UD-3: 2004

ACOUSTIC OUTPUT MANAGEMENT

- User selectable, transducer and scanning mode dependent
- Dedicated Output Display on the system monitor display of output acoustic
- Power level, as well as thermal and mechanical indices:
- PWR – Output Power level. Range: From 2 % of maximum output
- Level is increased by 2% in each step.
- Mechanical Index (MI): 0.01~1.90 Range
- Thermal Index (TI): 0.01~6.00 Range
 - TIC – Thermal Index, Bone at Surface
 - TIB – Thermal Index, Bone at Focus
 - TIS – Thermal Index, Soft Tissue

ANTI-VIRUS SOLUTION

- Disable USB Autorun Feature
 - Executable applications in USB stick are never launched
 - Prevent autorun virus through USB stick
- Dedicated Output Display on the system monitor display of output acoustic
- Block Network Port (Except DICOM communication port)
 - Ultrasound Machine allow only DICOM data through DICOM port
 - The network data of other network ports are rejected by Windows firewall
- Prohibit user from accessing windows application (such as Explorer)
 - Impossible to execute applications which is not allowed
 - Impossible to access internet web pages

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