SAMSUNG MEDISON

HS40

Data Sheet

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Rev 01

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Product Strategy Team | PM Part

Table of Contents

SPECIFICATION SUMMARY

PHYSICAL SPECIFICATION

- Height: 1,354 ~ 1,620mm (with monitor)
- Width: 520 mm
- Depth: 730 mm
- Weight: 54 Kg (without accessories)
- Weight: Approx. 57 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
- Freehand 3D 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, Chinese

ELECTRICAL PARAMETERS

- 100-240 VAC, 620 VA, 50/60 Hz

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

PHYSICAL SPECIFICATION

- Height: 1,354 ~ 1,620mm (with monitor)
- Width: 520 mm
- Depth: 730 mm
- Weight: 54 Kg (without accessories)
- Weight: Approx. 57 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(Optional)
- Trackball
- Probe Holder / Gel Holder
- Front Handle
- Integrated PC Module
- Integrated HDD
- 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 °
  - Tilt: + 25 ° / - 70 °
  - Lift: 180 mm

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
- 4 User Keys
- Tri-Status backlit
- 5 Probe Holders
- Height Adjustment: 100 mm

PC

- Main Processer: AMD Bald Eagle RX-425BB
- Main Memory: 8 GB
- Built-in HDD: 0.5 TB

ELECTRICAL SPECIFICATIONS

- Frequency: 50/60 Hz
- Voltage: 100 ~ 240 VAC
- Power Consumption: Max.620 VA with Peripherals
- Heat Dissipation: 2,729.7 [BTU/h]
- System Noise: under 40dBA[MAX.]
- Built-in Equipotential Circuit

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: LN5-12, L5-12/50
- Curved Array: C2-8, C2-5
- Endo-Cavity: EVN4-9, ER4-9
- Micro-Convex Array: CF4-9
- Phased Array: PN2-4
- Pencil: DP2B
- Volume Probe (3D mechanical probe)
  - Curved Volume: VN4-8

SYSTEM STANDARD FEATURES

- Hybrid Full Digital Beam-forming
- Frequency Range: 2 ~ 16MHz
- 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
- Frequency Compounding (FSI)
- ClearVision
- 256 Shades of Gray
- System Internal Dynamic Range: 256
- Maximum Frame Rate
  - Over 2,000 fps (Hz)
- Maximum Color Frame Rate
  - Over 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™
- EZ compare
- Report Package
- Body Marker
- System Boot up: Max. 180 Sec
- Probe Change: 2-3 Sec

- User Programmable Preset : Over 30 Presets
- User Programmable Key: 4 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+
- Hello Mom
- Needle Mate+
- Panoramic
- 5D NT
- 5D Follicle
- RealisticVue
- XI STIC
- MultiVision
- Strain+
- SEE Stream (RU region only
  - RUS restricted mode (RU region only)
  - DVD-RW
  - ECG (AHA / IEC)
  - Foot Switch
  - Gel Warmer
  - Printer Tray (Large / Small)
  - 3P connector PSA
  - 3P Connector PSA (with Pencil Probe Port)
  - 4P Connector PSA
  - 4P Connector PSA (with Pencil Probe Port)

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

  - Birth / Age

  - Accession Number

  - Diag. Physician

  - Ref. Physician

  - Operator

  - Indication

  - Study Information

  - E-mail
- Gestational Age: LMP/EDD/GA
- Institute

- Operator
- Probe Name
- Probe Orientation
- Depth / Width
- Focal Zone
- Focal Number
- TGC Line
- FPS (Hz)
- Frequency
- 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)

LANGUAGE

- Display Language

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

- Input Language

  - English, French, German, Italian, Russian, Nordic (Norwegian, Finnish, Swedish, Danish)

OPERATING ENVIRONMENT

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

PROCESSING

DATA PROCESSING

- System Processing Channel: 286,720
- 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 : 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

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
  - 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

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

IHE

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

PERIPHERAL INTERFACE

- Audio in L/R
- 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, Sony UP-D898MD, Sony UP-X898MD, Mitsubishi P95DW, Mitsubishi P95D
  - Digital Color Video Printer: Sony UP-D25MD, Mitsubishi CP30DW
  - USB Line Printer: Samsung CLP-620NDK, ML-2950

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)
  - Pen2, Pen1, Gen, 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
  - Accept ROI
  - Init
  - Layout
  - Ref. Image: A/B/C/OH

- 3D Rotation: -90°/90°/180°
- Select
- Position
- Bias
- Mix
- Vol. Index
- Th. Low
- Transparency

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

- Light direction (9 directions)
- Move light
- Set color (Hue, Saturation, Lightness)

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

LA3-16AD

- 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

LN5-12

- Band Width : 5 ~ 12 MHz
- Radius of curvature : Flat
- Field of view : 38.1 mm
- Number of elements : 128
- Biopsy Guide : Available
- Application : Abdomen, MSK, Small Parts, Vascular, OB, GYN, Pediatric
- Safety Class: BF

L5-12/50

- Band Width : 5 ~ 12 MHz
- Radius of curvature : Flat
- Field of view : 52 mm
- Number of elements : 128
- Biopsy Guide : Available
- Application : Abdomen, MSK, Small Parts, Vascular, OB, GYN, Pediatric
- Safety Class: BF

CONVEX

CA2-8AD

- Band Width: 2 ~ 8 MHz
- Radius of curvature : 60.365 mm
- Field of view : 58 °
- Number of elements : 192
- Biopsy Guide : Available
- Application : Abdomen, OB, GYN
- Safety Class: BF

C2-8

- Band Width: 2 ~ 8 MHz
- Radius of curvature : 51.07 mm

- Field of view : 68.176 °
- Number of elements : 128
- Biopsy Guide : Available
- Application : Abdomen, OB, GYN
- Safety Class: BF

C2-5

- Band Width: 2 ~ 5 MHz
- Radius of curvature : 39.64 mm
- Field of view : 75 °
- Number of elements : 128
- Biopsy Guide : Available
- Application : Abdomen, OB, GYN
- Safety Class: BF

CF4-9

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

ENDOCAVITY

EVN4-9

- 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

ER4-9

- 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

VN4-8

- Band Width: 4 ~ 8 MHz
- Radius of curvature : 38.10 mm
- Field of view : 77.24 °
- Number of elements : 128
- Biopsy Guide : Available
- Application : Abdomen, OB, GYN
- Safety Class: BF

V5-9

- 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

PN2-4

- Band Width : 2 ~ 4 MHz
- Radius of curvature : Flat
- Field of view : 90 °
- Number of elements : 64

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

PENCIL

DP2B

- Center frequency : 2.0MHz
- Application : Cardiac
- Safety Class : BF

MEASUREMENT

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

ABDOMEN

- Gallbladder
- Pancreas
- Bowel
- Kidney Vol. (Right / Light)
- 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 stickDedicated 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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