

SAMSUNG MEDISON

HS50

Data Sheet

V2.03

December 23, 2020

Rev01



SPECIFICATION SUMMARY

PHYSICAL SPECIFICATION

- Height: 1,345 ~ 1,685mm (with monitor)
- Width: 525 mm
- Depth: 750 mm
- Weight: 79.8 Kg (without accessories)
- Weight: Approx. 98 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
- Full screen 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 LCD Monitor(LED Backlight unit, hereafter referred to as "LCD monitor")
- Touch Screen Monitor
 - Resolution: 1,280 x 800
 - 10.1 Inch LCD Monitor(LED Backlight unit, hereafter referred to as "LCD monitor")

ECG

- USB Type (Defibrillation-Proof 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

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

38



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

- 2 ▪ 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 10 IoT Enterprise 2019 LTSC Upgrade(Value)Gel Warmer (Optional)
- ECG (Optional)

MAIN MONITOR

- 21 ▪ 21.5 Inch LCD Monitor(LED Backlight unit, hereafter referred to as "LCD monitor")
- 28 ▪ Resolution: 1,920 x 1,080 (16:9)
 - Number of Color: 16.7 M
 - Brightness Adjustment
 - Interactive Dynamic Software Menu
- 36 ▪ Articulated Monitor Arm
 - Swivel: +/- 160 °

CONTROL PANEL

- 37 ▪ Touch Screen
 - 10.1 Inch LCD Monitor(LED Backlight unit, hereafter referred to as "LCD 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

- 31 ▪ 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)
 - Standby Mode : About 24 hours
 - Scan time: 25 min.(Basic mode Live scan)
 - Wake up time from Sleep mode: About 30 sec.
 - 14.4VDC, 6900mAh, 99.36Watt Lithium-ion Battery
 - Charging time: About 5 Hours

SYSTEM SPECIFICATION

1

APPLICATIONS

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

PRESETS

- Abdomen
- Upper
- 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

14

OPERATION MODE

12

- B-Mode (2D)

15

- Color Doppler Mode (C)
- Pulse Wave Doppler (PWD)
- Continuous Wave Doppler(CWD): Steered / Static

18

- Power Doppler Mode (PD)

11

- S-Flow™ Mode
- LumiFlow
- M-Mode (M)
- Anatomical M Mode
- Single/Dual/Quad Mode
- Volume Mode

13

- - 3D / 4D / 3D XI / XI STIC™

17

- TDI/TDW

33

- ElastoScan Mode

16

DISPLAY MODE

30

- 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

- 29
- Zoom Mode
 - Write Zoom / Read Zoom / Pen zoom/ Panning

- 35
- Needle Mate+
 - Panoramic
 - Trapezoid
 - Full screen

TRANSDUCER TYPES

- Linear Array: LA3-14AD, LA3-16A
- Curved Array: CA1-7AD, CA2-9AD, CF4-9, CA2-6BM
- Endo-Cavity:ER4-9, EVN4-9, EA2-11AR, EA2-11AV
- Phased Array: PE2-4, PA3-8B, PA4-12B, PA1-5A
- CW: DP2B , CW6.0
- TEE: MMPT3-7
- 3D: CV1-8AD, V5-9, EV2-10A

SYSTEM STANDARD FEATURES

- Hybrid Full Digital Beam-forming
- 19
- Frequency Range: 1 ~ 18MHz
- Displayed Imaging Depth (Probe dependent)
 - Minimum Depth of Field: 2cm
 - Maximum Depth of Field: 40cm
- Number of Focal Points: 1 ~ 4
- 25
- Transmission Focal Zone Position selection
 - 1 ~ 8 Focal Points Selectable
 - (Probe and Application dependent)
- 26
- Continuous Dynamic Receive Focus / Aperture
- Multi-frequency / Wideband Technology
- S-Vue Technology
- Frequency Compounding (FSI)
- ClearVision
- 7
- 256 Shades of Gray

- 9
- 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

- 10
- Post Processing

- 23
- Digital Calipers / Measurement
 - Cine Memory

- 27
- 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

- 20
- PW Velocity Range: 0.1cm/s ~ 8.8m/s
 - CW Velocity Range: 1cm/s ~ 19.3m/s
 - Freehand 3D
 - Full screen

SYSTEM OPTIONS

- 4D
- 3D XI™
- AutoIMT+
- Cardiac Measurement
- CW Function
- 32
- DICOM



- Map
- Frame Average
- Power
- ClearVision Index
- MultiVision Index
- Gray Bar
- Acoustic Index: TIs, Tlb, Tic
- Mechanical Index: MI
- Caliper & Measurement Result
- Indicator
- Pointer
- Body Marker
- ROI Position / ROI Size
- Wall filter
- Zoom / Panning
- 34 — ▪ Biopsy Guide Line (Probe dependent)

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

- 8 — ▪ System Processing Channel: 1,146,880
- Raw Data Image Analysis
- Cine

- Function: save / review / play / stop / pause / export / Trim Start / Trim End

22 —

- 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™)
- 22 — ▪ 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

24 —

- B/M-Mode
 - Dynamic Range
 - Frame Average
 - Frequency
 - Gain
- 24 — - 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



- 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 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 P95DE, Mitsubishi P95DW
 - Digital Color Video Printer: Sony UP-D25MD, Mitsubishi CP30DW
 - USB Line Printer: Samsung CLP-620NDK, ML-2950 EPSON L805, HP M454DN

39

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 ~ 40cm (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



- 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 ARRAY

3 — 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

LA2-9A

- Center frequency : 5.15MHz
- Band Width : 2 ~ 9 MHz
- Radius of curvature : Flat
- Field of view : 44.16 mm

- Number of elements : 192
- 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

LA3-16AI

- Center frequency : 9.3MHz
- Band Width : 3 ~ 16 MHz
- Radius of curvature : Flat
- Field of view : 25.6 mm
- Number of elements : 128
- Biopsy Guide : Not available
- Application : Abdomen, MSK, Small Parts, Vascular, OB, GYN, Pediatric
- Safety Class: BF

CURVED ARRAY

4 — 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

5

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

EA2-11AR

- Center frequency : 6.4 MHz
- Frequency Bandwidth : 2 ~ 11 MHz
- Radius of curvature : 10.1mm
- Field of view : 150°
- Number of elements : 192
- Biopsy Guide : Available
- Application : Gynecology, OB, Urology
- Safety Class:BF

EA2-11AV

- Center frequency : 6.4 MHz
- Frequency Bandwidth : 2 ~ 11 MHz
- Radius of curvature : 10.1mm
- Field of view : 150°



- Number of elements : 192
- Biopsy Guide : Available
- Application : Gynecology, OB, Urology
- Safety Class:BF

3D

6

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

EV2-10A

- Center frequency : 5.95MHz
- Band Width: 2 ~ 10 MHz
- Radius of curvature : 10.1 mm
- Field of view : 150.3°
- Number of elements : 192
- Biopsy Guide : Available
- Application : OB, GYN, Urology

SAFETY CLASS: BFPHASED ARRAY

PA1-5A/PA1-5A(PE)

- Center frequency : 2.8MHz
- Band Width : 1 ~ 5 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

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

