

Specifications for S11 Plus Digital Color Doppler Ultrasound System



SonoScape

SonoScape Medical Corp

1 General Specifications

1.1 Applications

- Abdomen
- OB/Gynecology
- Cardiology
- Peripheral vascular
- Small parts
- Musculoskeletal
- Transvaginal
- Transrectal
- Cephalic

1.2 Available Probes

- Convex array probe
- Linear array probe
- Phased array probe
- Volume probe

1.3 Imaging Modes

- B
- THI/PHI
- M
- Anatomical M
- Color M
- CFM
- PDI/DPDI
- PW
- CW
- TDI
- TDI+PW
- TDI+M

1.4 Function and Configuration

- 5-band adjustable frequency in B mode (fundamental wave and harmonic wave)
- μ -scan
- Compound imaging
- LGC (2 bands)
- Tissue specific index
- Image rotation
- Trapezoid Imaging
- HPRF
- Simultaneous mode (Triplex)
- PW Auto Trace
- Auto IMT
- Auto NT
- Auto EF

- Zoom
- B mode Panoramic Imaging
- Biopsy Guide
- Vis-Needle
- Freehand 3D
- 3D/4D
- ECG

1.5 Available Languages

- Software: English, Simplified Chinese, Spanish, Russian, French, Italian, German, Norwegian, Portuguese
- Key panel: English, Simplified Chinese, Spanish, Russian, French, Italian, German, Norwegian, Portuguese
- User manual: English, Simplified Chinese, Spanish, French, German, Portuguese

2 Physical Specifications

2.1 Size and Weight

- Size: approx. 520 mm (W) \times 1300 mm (H) \times 720 (D) (The height is measured when the upper arm is adjusted to the lowest positions and the monitor is adjusted to the vertical direction)
- Weight: approx. 60kg

2.2 Monitor

- Medical high resolution monitor
- Resolution: 1024 \times 768
- Viewing angle: 176° (left and right), 176° (up and down)
- Swivel angle: $\pm 30^\circ$
- Up/down angle: -80° to 50°

2.3 Monitor Arm

Upper arm can be swiveled left or right relative to the lower arm; swivel angle: $\pm 90^\circ$

2.4 Control Panel

- User-oriented design
- Backlight design: panel buttons
- Multiple defined-keys
- TGC: 8 segment sliders
- Trackball sensitivity: adjustable
- With key panel on control panel

2.5 Speaker

Hi-Fi Speaker

2.6 Casters

- Diameter: 5 inches
- Four casters can all be independently locked

2.7 Probe Port and Probe Holder

- Probe port: 4 (activated and interchangeable)
- Probe holder: 5
- Coupling gel holder: 1
- Cable hanger: 2
- Probe cable hanger

2.8 Power

- Power supply: 100 - 240 V~, 2.7-1.1A
- Frequency: 50/60 Hz

2.9 Working Environment

- Temperature: 10°C to +40°C
- Relative humidity: 30% - 75% RH (no condensation)
- Atmospheric pressure: 700 hPa - 1060 hPa
- System noise: ≤ 55 dB

2.10 Storage and Transportation

Environment

- Temperature: -20°C to +55°C
- Relative humidity: 20% - 90% RH (no condensation)
- Atmospheric pressure: 700 hPa - 1060 hPa

3 Annotation and Body Mark

- All exams application included
- Annotation: text annotation and arrow annotation
- Annotation can be selected, edited and moved
- User-defined annotation
- Front size of text annotation: adjustable
- Body marks: ≥ 114
- Body marks classified by specific exam types, and position adjustable

4 Monitor Information

- Manufacturer logo
- Hospital name
- System date and time
- Probe and exam item
- MI and TIS
- Operator
- Probe icon
- Patient ID, name and date of birth

- Exam type icon
- Tissue temperature display (specified probe)
- Depth scale and focus position
- Image parameter
- Thumbnail
- Clipboard
- Screen saver

5 Image Parameter

5.1 Description

- System boot up: approx. ≤ 80s
- System shut down: approx. ≤ 15s
- Frame rate: ≥ 820 fps (e.g. L741 probe)
- Gray map: 256 levels
- Transducer element: up to 256
- Quad beams
- Audio: 0 - 100, 101 levels

5.2 B mode

- Gain: 1 - 255 adjustable
- Scan depth: ≥ 40 cm
- Compound imaging: Off, 1, 2, 3 levels
- Frequency: 5 bands adjustable (fundamental wave and harmonic wave)
- Chroma: 1 - 13, 13 levels
- Adaptive image fusion: 0 - 15, 16 levels
- μ-Scan: off, 2, 3, 7, 11, 5 levels
- Line density: Low, Med, High, 3 levels
- Persist: 0 - 95 (e.g. L741 probe)
- Focus number: 12 (e.g. L741 probe)
- Focus span: adjustable
- Dynamic range: 20 - 280 (e.g. L741 probe)
- Gray map: 1 - 7, 7 types selectable
- Power%: 1 - 100 adjustable, 100 levels
- Tissue acoustic characteristics: 1400 - 1700, 31 levels
- TGC: 8 segment sliders
- LGC: gain compensation for left or right part of image
- Image reverse: left/right, up/down, rotation
- Scan range and image position: adjustable
- B steer: 3 levels adjustable (linear array probe)
- Trapezoid Imaging: off, 1, 2 (linear array probe)
- Auto optimization

5.3 M Mode

- Gain: 1 - 255 adjustable

- Chroma: 1 - 5, 5 levels
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4
- Scan speed: Min, Slow, Med, Fast, Max, 5 levels (e.g. cardiology probe)
- Video invert: On/Off
- M process: Ave, Peak
- Power%: 30 - 100, 8 levels
- Color M: CFM, TDI

5.4 Anatomical M-mode

- Display 3 sample lines simultaneously
- Angle and position of sample lines adjustable

5.5 CFM Mode

- Frame rate: ≥ 110 fps
- Gain: 0 - 255 adjustable
- Power%: 0 - 100, 11 levels
- B reject: 0 - 255, 256 levels
- Size and position of color ROI: adjustable
- Image reverse: up/down, left/ right
- Invert: On/Off
- Frequency: 5 levels
- Wall filter: 25 - 750 adjustable (e.g. 2P1 probe)
- PRF: 0.5 - 8 kHz adjustable (e.g. L741 probe)
- Line density: Low, High, 2 levels
- Color map: 1 - 10, 10 levels
- Baseline: ± 15 , 31 levels
- Persist: 30 - 80
- ROI steer: 5 levels adjustable (linear array probe)
- ROI color: adjustable
- Auto optimization

5.6 PDI/DPDI Mode

- Power%: 0 - 100, 11 levels
- B reject: 0 - 255, 256 levels
- Persist: 0 - 60, 5 levels (e.g. L741 probe)
- Color map: 1 - 7, 7 levels
- Image reverse: up/down, left/right
- Wall filter: 35 - 750 adjustable (e.g. 2P1 probe)

5.7 PW Mode

- Gain: 0 - 255 adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4, 6 levels
- Simultaneous mode (Triplex)
- PW sample volume: 0.7 - 21 mm (L741 probe)

- PW sample position: adjustable
- Invert: On/Off
- Quick angle correction: 0° , 60° , -60°
- Angle correction range: 0° to 72°
- Sample line steer: 5 levels adjustable (linear array probe)
- Auto trace: achievable in real-time mode and frozen mode
- Baseline: -8 to 8, 17 levels
- Frequency: 5 levels
- Wall filter: 25 - 750 adjustable
- PRF: 1 - 16 KHz (2P1 probe)
- HPRF
- Max. velocity range: 0 - 11 m/s (2P1, PRF=16 KHz, $\theta=60^\circ$, the lowest baseline)
- Scan speed: Min, Slow, Med, Fast, Max, 5 levels
- Chroma: 1 - 5, 5 levels
- Dynamic range: 1 - 10, 10 levels
- Auto optimization

5.8 CW Mode

- Gain: 0 - 255 adjustable
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4, 6 levels
- CW sample position: adjustable
- Invert: On/Off
- Angle correction range: 0° to 72°
- Auto trace: achievable in real-time mode and frozen mode
- Baseline: -8 to 8, 17 levels
- Wall filter: 25 - 750 adjustable (2P1 probe)
- PRF: 1 - 48 KHz (2P1 probe)
- Max. velocity range: 0 - 38 m/s (2P1, PRF=48 KHz, $\theta=60^\circ$, the lowest baseline, SVD=0.1 cm, FRQ=1.8 MHz)
- Scan speed: Slow, Fast, Max, 3 levels
- Chroma: 1 - 5, 5 levels
- Dynamic range: 1 - 5, 5 levels

5.9 TDI Mode

- Tissue speed imaging
- Power%: 0 - 100, 11 levels
- B reject: 0 - 255, 256 levels
- Persist: 0 - 50, 5 levels (2P1 probe)
- Color map: 1 - 4, 4 levels
- Image reverse: up/down, left/right
- Invert: On/Off

- Wall filter: 25 - 750 (2P1 probe)

5.10 TDI+PW Mode

- PRF: 1-16 kHz (2P1 probe)
- Max. velocity range: 0 - 11 m/s (2P1, PRF=16 KHz, $\theta=60^\circ$, the lowest baseline, SVD=0.1 cm, FRQ=2 MHz)

5.11 TDI+M Mode

- Gain: 1 - 255 adjustable
- Chroma: 1 - 5, 5 levels
- Display format: H1/2, H1/4, V1/3, V1/2, V2/3, O1/4
- Scan speed: Min, Slow, Med, 3 levels
- M process: Ave, Peak
- Power%: 30 - 100, 8 levels

5.12 Freehand 3D

- Acquire method: linear scan, sector scan
- Display mode: dual-split screen display, quad-split screen display, 3D full display
- Storage type: image, volume
- Retrieve type: stored volume and image
- Rotate X: rotate 4° along X axis, Rotate Y: rotate 4° along Y axis, Rotate Z: rotate 4° along Z axis
- Up/Down: move the image up/down; Left/Right: move the image left/right
- View: Top, Bottom, Left, Right, Front, Back
- 3D viewing angle: 0° , 90° , 180° , 270°
- Free rotation: On/Off
- Select slice: A, B, C, 3D
- Reset: default settings, swivel angle, view angle
- Render mode: Surface, Skeleton, X-Ray
- Contrast: 0 - 100, 1 each step
- Transparency: 0 - 100, 1 each step
- Brightness: 0 - 100, 1 each step
- Smoothness: 0 - 30, 1 each step
- B Chroma: 1 - 13, 1 each step
- 3D Chroma: max. 0 - 14 adjustable, 1 each step (render mode dependent)
- Zoom: 0.5 - 3.0, 0.1 each step
- Methods for cropping reviews
By trace (crop inner or outer image)
By box (crop inner or outer image)
By eraser (big or small eraser)
- M-Slice display: 1×2 , 2×2 , 3×3 , 3×4 , 4×4 , 5×5
- Slice spacing: 0.5 - 10.0, 0.5 each step

- Slice number: 3 - 29, 2 each step

5.13 3D/4D

- Available for volume probe
 - Display mode: dual-split screen display, quad-split screen display, 3D full display
 - Rotate X: rotate 4° along X axis, Rotate Y: rotate 4° along Y axis, Rotate Z: rotate 4° along Z axis
 - Up/Down: move the image up/down; Left/Right: move the image left/right
 - View: Top, Bottom, Left, Right, Front, Back
 - 3D viewing angle: 0° , 90° , 180° , 270°
 - Reset: default settings, swivel angle, view angle
 - Render mode: Surface, Skeleton, X-Ray
 - Free rotation: 0° , 45° , 90° , 180° , 270° , 360°
 - Image quality: High, Medium, Low
 - Scan angle: 5° to 75° , 5° each step
 - Stability: On/Off
 - VolPre: user can return to pre-activate mode from activate mode
 - Cine playback: 0 - 499 (volume value dependent)
 - Trackball (free rotation switch highlighted): free rotation, Z-axis rotation
 - Contrast: 0 - 100, 1 each step
 - Transparency: 0 - 255, 1 each step
 - Brightness: 0 - 100, 1 each step
 - Smoothness: 0 - 30, 1 each step
 - 3D Chroma: max. 0 - 14 adjustable, 1 each step (render mode dependent)
 - B Chroma: 1 - 13, 1 each step
 - Methods for cropping reviews
By trace (crop inner or outer image)
By box (crop inner or outer image)
By eraser (big or small eraser)
 - C-Plane display: AB, AC, BC, ABC
 - M-Slice display: 1×2 , 2×2 , 3×3 , 3×4 , 4×4 , 5×5
 - Slice spacing: 0.5 - 10.0, 0.5 each step
 - Slice number: 3 - 29, 2 each step
- ## 5.14 Panoramic Imaging
- B Mode Panoramic Imaging
 - Probe type: linear, convex
 - Rotation: 0° to 360° , 5° each step
 - Zoom: 2.0 times

5.15 Biopsy Guide

- Biopsy line angle: adjustable
- Biopsy line angle calibration
- Biopsy line offset calibration
- User-defined biopsy line angle

5.16 Vis-Needle

- Available probes: L741, 10I2
- Steer angle: 20°, 30°, 40°, 50°, 4 levels
- Biopsy depth: adjustable
- Dual live

5.17 Wide Scan

Trapezoid Imaging: Off, 1, 2 (linear array probe)

5.18 Zoom

- Zoom ratio: 0.8 - 10.0
- One-key full screen display

5.19 Preset Exam

- Preset optimal exam mode and parameter for different probes and exam types
- Preset order: adjustable
- Import or export preset

6 Measurement/Analysis and Report

6.1 Measurement Settings

- BSA setting: Eastern, Western
- Cross cursor size: Large, Medium, Small
- Measure line size: Large, Medium, Small
- Distance dash line display: On, Off
- Velocity cross line display: On, Off
- Ellipse cross line display: On, Off
- Line ID display: On, Off
- Keep result window: On, Off
- Result font size: Large, Medium, Small
- Result position: Right Top, Right Bottom, Left Top, Left Bottom adjustable in 2D, dual+quad-split screen display or M+D mode

6.2 Basic Measurement Package

- Obstetrics measurement package
- Small parts measurement package
- Gynecology measurement package
- Vascular measurement package

- Abdominal measurement package
- Cardiac measurement package
- Urology measurement package
- Pediatrics measurement package

6.3 Report

- Application-specific measurement report
 - ✓ Fetal growth curves
 - ✓ Fetus anatomy structure
 - ✓ Fetus compare (four fetuses)
- Measurement values: editable
- Image: adjustable
- Report logo (170 × 60 Pixel, bmp): changeable
- Font size and color: selectable
- Background color: selectable
- Display items: selectable
- Export format: PDF, TXT

6.4 Auto Measurement

- Auto IMT
- Auto NT
- Auto EF

7 Storage and Data Management

7.1 Storage

- Total storage: 500 G; free: ≥ 466 G
- Max. number of frames for cine: 100 - 2000 frames
- Storage of 4D cine: ≥ 77 frames (probe and parameter dependent)
- Directly store to USB drive

7.2 Data Management

- Image share service (Samba)
- Export data to USB drive or DVD
- Export format:
 - ✓ System format
 - ✓ PC format
 - ♦ Image format: BMP, JPG, TIF
 - ♦ Cine format: AVI, WMV
 - ♦ Report format: PDF, TXT
 - ✓ DICOMDIR
- Clipboard: thumbnail display, delete, export
- Create exam, delete exam, resume suspended exam
- Query/Retrieve service
- Review current exam and history exam

- Post-processing and post-measurement
- Show gallery

8 Cine Review

- Cine review: frame by frame manual play and auto play with adjustable speed
- Skip from first frame to last frame
- Auto playback with trackball

9 System Input and Output

9.1 I/O port

- USB port:
 - ✓ 4 USB 2.0 ports
- Video output port: 3
 - ✓ VGA
 - ✓ VIDEO OUT
 - ✓ S-VIDEO OUT
- AUDIO OUT port: 1
- Foot switch input: 1
- Ethernet port: 1
- Video print port: 1

9.2 Video Output Settings

- TV-NTSC
- TV-PAL
- VGA (4:3)
- VGA (16:9)
- DVI (4:3)
- DVI (16:9)

9.3 Network Connection

- Local network
- Wireless network (the same function with local network)

10 DICOM 3.0

- DICOM storage
- DICOM structured report
 - ✓ Gynecology structured report
 - ✓ Obstetrics structured report
 - ✓ Cardiology structured report
 - ✓ Vascular structured report
- DICOM storage commitment
- DICOM Worklist
- DICOM MPPS
- DICOM print
- DICOM Q/R list

11 Probe

11.1 Convex Array Probe

- C344
 - ✓ Application: Abdomen, Gynecology, Obstetrics
 - ✓ Frequency range: 2.0 - 7.0 MHz
 - ✓ Field of view: 72°
 - ✓ Depth: ≥ 24 cm
 - ✓ Acoustic lens: 57 mm × 18 mm
 - ✓ Biopsy bracket: NGBC344, 21°, sterilizable
 - C322
 - ✓ Application: Abdomen
 - ✓ Frequency range: 2.0 - 7.0 MHz
 - ✓ Field of view: 68°
 - ✓ Depth: ≥ 32 cm
 - ✓ Acoustic lens: 32 mm × 11 mm
 - ✓ Biopsy bracket: NGBC322, 5°/25°, sterilizable
 - 6V1
 - ✓ Application: Gynecology, Urology
 - ✓ Frequency range: 3.0 - 15.0 MHz
 - ✓ Field of view: 135°
 - ✓ Depth: ≥ 16 cm
 - ✓ Acoustic lens: 32 mm × 10 mm
 - ✓ Biopsy bracket: NGB6V1, 3°, sterilizable
 - ✓ Temperature monitor
 - C613
 - ✓ Application: Cardiology, Abdomen
 - ✓ Frequency range: 4.0 - 13.0 MHz
 - ✓ Field of view: 90°
 - ✓ Depth: ≥ 15 cm
 - ✓ Acoustic lens: 30 mm × 10 mm
 - ✓ Biopsy bracket: NGBC613, 12°/18°/30°, sterilizable
 - EC9-5
 - ✓ Application: Urology
 - ✓ Frequency range: 3.0 - 15.0 MHz
 - ✓ Field of view: 147°
 - ✓ Depth: ≥ 16 cm
 - ✓ Acoustic lens: 27 mm × 10 mm
 - ✓ Biopsy bracket: NGBEC9-5, 1.5°, sterilizable
 - ✓ Temperature monitor
 - BCC9-5
 - ✓ Application: Urology
 - ✓ Frequency range: 3.0 - 15.0 MHz
 - ✓ Field of view: 140°
 - ✓ Depth: ≥ 16 cm
 - ✓ Acoustic lens: 26 mm × 10 mm
 - ✓ Biopsy bracket: NGBBCC9-5, 0°, sterilizable
- ### 11.2 Linear Array Probe
- L741
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0 - 16.0 MHz

- ✓ Width of view: 46 mm
- ✓ Depth: ≥ 10 cm
- ✓ B steer: $0^\circ/\pm 6^\circ$
- ✓ ROI/sample line steer: $0^\circ/\pm 12^\circ/\pm 16^\circ$, 5 levels
- ✓ Trapezoid Imaging: $6^\circ/20^\circ$
- ✓ Acoustic lens: 49 mm \times 10 mm
- ✓ Biopsy bracket: NGBL741, 45° , sterilizable
- 10I2
 - ✓ Application: Vascular, Small parts, Musculoskeletal, Neurology
 - ✓ Frequency range: 4.0 - 16.0 MHz
 - ✓ Width of view: 25 mm
 - ✓ Depth: ≥ 10 cm
 - ✓ B steer: $0^\circ/\pm 6^\circ$ (for some modes: $0^\circ/\pm 8^\circ$)
 - ✓ ROI/sample line steer: $0^\circ/\pm 12^\circ/\pm 16^\circ$
 - ✓ Trapezoid Imaging: $6^\circ/20^\circ$ (for some modes: $8^\circ/20^\circ$)
 - ✓ Acoustic lens: 28 mm \times 10 mm

11.3 Phased Array Probe

- 2P1
 - ✓ Application: Cardiology, Abdomen
 - ✓ Frequency range: 2.0 - 4.0 MHz
 - ✓ Field of view: 90°
 - ✓ Depth: ≥ 32 cm
 - ✓ Acoustic lens: 24 mm \times 16 mm
 - ✓ Biopsy bracket: NGB2P1, 19° , sterilizable
- 5P1
 - ✓ Application: Pediatric Cardiology
 - ✓ Frequency range: 2.0 - 9.0 MHz
 - ✓ Field of view: 90°
 - ✓ Depth: ≥ 18 cm
 - ✓ Acoustic lens: 15 mm \times 13 mm

11.4 Volume Probe

VC6-2

- ✓ Application: Abdomen, Obstetrics
- ✓ Frequency range: 2.0 - 7.0 MHz
- ✓ Field of view: 68°
- ✓ Depth: ≥ 24 cm
- ✓ Acoustic window: 150 mm \times 86 mm

12 Accessories

12.1 Printer

- Printer types
 - ✓ Color ink jet printer
 - ✓ B/W video printer
 - ✓ Color video printer
- Print type
 - ✓ Video print
 - ✓ Network print
 - ✓ USB print
 - ✓ Windows print
- Video invert
- Add printer

12.2 External Wi-Fi

12.3 Foot Switch

2 pedals

12.4 DVD R/W Drive

12.5 Built-in Battery

Battery running time: 90 minutes

12.6 1T Hard Disk

12.7 ECG Cable

13 Safety and Certification

- Comply with:
 - ✓ IEC 60601-1, Class I BF
 - ✓ IEC 60601-1-2, Group 1, Class B
 - ✓ IEC 60601-2-37

NOTE:

- The specifications of this system may change without any prior notification.
- Some products or features may not be available in some countries.
- Please contact your local SonoScape sales representative for more information.

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