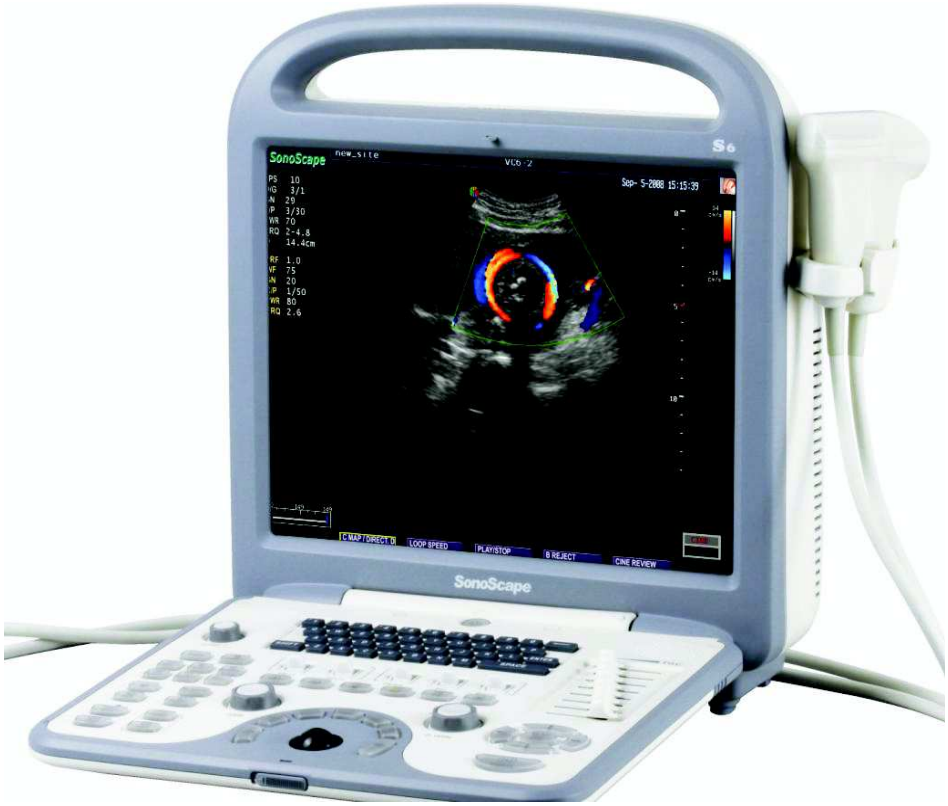
Specifications for S6 High-Performance Color System



SonoScape

THE PINOEER OF COLOR DOPPLER ULTRASOUND IN CHINA

Product Overview

General Specification

The high performances of the SonoScape S6 stem from the advanced ultrasound Doppler imaging technologies that include full digital beam-former, wide dynamic range, multi-beam processing, etc.

The ergonomic user-friendly design enables user to customize the system according to the specific application needs, and the graphic exam icon assure you familiar with the system in few minutes.

Advanced Technologies

- Digital Front-End
- Compound Imaging
- Harmonic Imaging
- Panoramic support
- High Pulse Repetition Frequency
- Graphic Exam Icon

Standard components

- Color Mode
- PW Mode
- CW Mode
- THI Mode
- 3D Mode
- Dicom
- Cardic Package
- OB Package
- Urology Package
- Vascular Package
- Small Part Package
- Tee Probe
- Phased Array Probe
- ECG Function
- 12MHZ Probe
- Steer M support
- HPRF support
- Color M Support

Optional Functions

- TDI support
- B Flow Support
- Panoramic support
- Dicom Wklist Support
- IMT Support

System Overview

Applications

- Abdominal
- Cardiology
- Obstetrical
- Gynecological
- Musculoskeletal
- Vascular
- Urological
- Small Parts and Superficial
- Pediatric
- Anaesthesia

Scanning Methods

- Electronic Convex Sector
- Electronic Linear
- Electronic Phased Array Sector

Sweep Angle

- Curved Probe: 70 degree or more
- Phased Array Probe: 90 degree or more
- Micro-curved Probe: 133 degree or more

Transducer Types

- Convex Array
- Micro convex Array
- Linear Array
- Phase Array

Operating Modes

- B-Mode
- M-Mode
- TDI-Mode
- Color Flow Mode(CFM)
- Power Doppler Imaging(PDI)
- Pulse Wave Doppler(PWD)
- Continuous Wave Doppler(CWD)
- 3D Mode
- Color M Mode
- Steer M-Mode

Display Modes

- B: Gray-scale imaging
- Color: Color Doppler, Power Flow and Directional Power Flow Imaging
- THI(Tissue Harmonic Image)
- Dual B, Quad Display
- B and M, display format selectable
- B and Doppler
- B+Color
- Dual B(Flow)
- Triplex mode: B, Flow, and PW/CW Doppler
- B, Flow, and Color M
- Simultaneous Refresh Display
- Variable screen size: Change the screen ratio of 2D and Doppler/M in duplex or triplex mode
- Panoramic Imaging(optional)
- Compound Imaging
- Trapezozd Imaging

Standard Features

- Frame Rate:Max.505 frames/sec or more
- Display Gray Scale:256 levels
- Digital Channel Number:1024
- Probe Elements: Up to 256

Media &Peripherals

- Color Desk Jet Pinter(optional)
  HP5850/6840/6848/6940/K5400dn
- B/W Video Pinter(optional)
  UP895MD

- Color Video Pinter(optional)

  Sony UP-20

System Menu Setting

- File Manager

  →Copy、Paste、Delete

  →Convert to PC Format

  →Display Report Files Only

  →Display Image Files Only

  →Multiple Selection

  →Search
- Set Time/Date
- Facility Name
- Dicom
- System Information

  →Control Number

  →Software Version
- System Setting

  →General Setting
  - Language Setting
    - English
    - Simple Chinese
    - Spanish
    - Russian
    - French
    - Italian
  - Screen Saver
  - Trackball Sensitive
  - Clip Format
    - CIN、WMV、AVI
  - Date Format
    - mm/dd/yyyy
    - yyyy/mm/dd
    - dd/mm/yyyy
  - Caps Lock: on/off
  - Print Size
  - Still Format
    - PPM、JPG
    - BMP、TIF

  →Set Printer
  - Printer Driver
  - Video Invert
  - Insert Driver

  →Set Calculation Menu
  - 2D Mode
    - Angle
    - Volume
    - Volume L×W×H
    - Doppler Area
    - Vascular
    - Small Part
    - Obstetrical/ Gynecological
    - Left Ventricle
    - Urologic
    - Mitral Valve Diam
    - Lv Outflow Diam
    - Pul.Valve Diam
  - PW Mode
    - Flow Velocity
    - Acceleration

- Time
- Heart Rate
- Cardiac
- Obstetrical/ Gynecological
- Vascular

◆ M Mode
- Distance
- Time
- Slope
- Heart Rate
- left Ventricle
- Mitral Valve
- Aortic Valve

→Set Measurement Method

◆ BPD Method
- Hadlock
- Jeanty

◆ FL Method
- Hadlock
- Hohler
- Jeanty

◆ CRL Method
- Robinson
- Hadlock
- Nelson

◆ EFW Method
- WEI/SAB HC,AC,FL
- Shepard AC,BPD
- Hadlock1 AC,FL
- Hansman AC,FL,HC
- Tokyo BPD,APTD,TTD,FL
- Hadlock2 HC,AC,FL
- Hadlock3 BPD,AC,FL
- Hadlock4 HC,AC
- Hadlock5 BPD,HC,AC,FL
- Shinozuka BPD,AC,FL
- Warsof FL,AC

◆ BSA setting
- Eastern
- Western

◆ Measure Method
- Ellipse
- Trace

◆ Package
- All Package
- Icon Driven

◆ Continue Dist: on/off

◆ Dop Auto
- AUTO
- SEMI-AUTO

◆ Define OB table
- Create
- Edit
- Delete

→Annotation Edit

◆ Insert

◆ Delete

◆ Edit

◆ Save

→Define quick key

- GS (Gestational Sac diameter)
- CRL (Crown Rump Length)
- BPD (Biparietal Diameter)
- HC (Head Circumference)
- AC (Abdominal Circumference)
- FL (Femur Length)
- NT (Nuchal Translucency)

→Load Default

- Load
- Create
- Retrieve

Post-Processing

- RAW data digital processing
- Read Zoom up to 10x

B Mode

→GSC

→Chroma

→LT→RT

→Play/Stop

→Loop Speed

→Start

→End

→Frame By Frame

Color Flow Mode

→C Map

→B Reject

→Flow Invert

→Loop Speed

→Start

→End

→Frame By Frame

PW/CW -Mode

→Chroma

→Video Invert

→Display Format

→Start

→End

→Frame By Frame

→Baseline

M-Mode

→Chroma

→Video Invert

→Display Format

→Start

→End

→Frame By Frame

Scanning Parameters

B-Mode

- Focus: Up to 12, focus span adjustable
- zoom: Max. > = 10， Show zoom X value
- TGC(Time Gain Control) 8 slide controls
- Tissue acqustic: Adjustable according to tissue type （1400-1700,10steps each）
- Dynamic range-compression selections: 20-280 (probe dependent)
- Gain:0-255 adjustable
- Depth: 32.9 cm Max (probe dependent)
- GSC(gray scale curve) 7 steps selectable

- Persist (Frame correlation): 0-95 (probe dependent)
- Chroma: Max.13 selectable
- SEC.WIDTH: B Image width adjustable
- SEC.POS: B image lateral position adjustable
- Line Density: 3 selections (high/med/low)
- Adapt . IM Fusion: 15 kinds
- Biopsy Guide: on/off
  Biopsy Offset adjustable
  Biopsy Angle adjustable
- Left and Right Inversion
- Up and Down Inversion
- Trapezoid Image: ON/OFF（liner array probe）
- Compound Image: ON/OFF
- Frequency : 5 steps
- Power: 1 to 100 changeable，1 steps each
- B Steer Mode

Color Flow Mode/TDI Mode

- Frame Rate: max 25 frames/sec
- Color Area Size and Position: adjustable
- Persistence: 0-80(probe dependent）
- Frequency Range: 5 steps
- Pulse Repetition Frequency: 0.5-12KHZ
- Steer Angle: 5 kinds (linear probe)
  Max. ±20 degrees,
  0, ±16, ±20 changeable
- Baseline: ±15 steps
- Filter: Up to 750 Hz (exam dependent)
- B and B(Flow) Simultaneous Real-time Display
- Color Map: 6 kinds
- Imaging Area and Position (adjustable)
- B Reject: 0-255
- Flow Invert: ON/OFF
- Left /right: ON/OFF
- Line Density: 2 kinds (low and high)
- Color Distribution Display in Freeze Mode.

M-Mode

- sweep speed: 2、4、6、8sec/plane
- Chroma: 5 kinds selectable
- Video Invert: ON/OFF
- Frequency: 5 steps
- M Process: Switch average or peak detection processing for the M vector display.
- Steer M: 3 lines，Display Frame Rate
- Display format: H1/2、H1/4、V1/3、V1/2、V2/3、O1/4

Spectral Doppler

- Doppler methods
  - PW (pulsed wave) Doppler
  - CW Doppler
- One Button Optimization function
- Doppler Envelope function in Real time
- High Pulse Repetition Frequency

PW：1-20KHz (exam dependent)

CW：1-24KHz

- Max velocity range:

  0.0004-40.9 m/s（pw）

  0.0013-49.1 m/s（cw）
- BaseLine Shift: Available up to 17 steps
- Angle correction: 0-80 degrees
- Dynamic Rage: 10 steps selectable
- Steer Angle: 5 kinds (linear probe)

  Max. ±20 degrees,

  0, ±16, ±20 changeable
- Spectrum Inversion: Possible
- Angle Correction: on /off
- Sample Volume Size for PW Doppler:

  1 -20 mm, changeable in 1 mm step
- Sweep Speed: 2、4、6、8sec/plane
- Chroma: Max.5 Kinds adjustable
- Video Invert: on/off
- 2D Refresh: on/off
- Display format: H1/2、H1/4、V1/3、V1/2、V2/3、O1/4

3D Mode

- 3 arbitrary sections simultaneously
- Clear Roi
- Restore Roi
- Crop: on/off
- Roi Mode: on/off
- Hide Roi: on/off
- Render Mode: Vol、MaxIP、X-ray
- Auto Rotate (45、90、180、270、360 degrees adjustable)
- Trace Cut: on/off
- Undo Cut
- Clip Plane: on/off
- Opacity Offset: 0-255 adjustable
- Opacity Slope: 0-255 adjustable
- Multi-slice:Ref A、Ref B、Ref B
- Slice Spacing: 0.5-2.0 adjustable
- Scan Method: Lin、Sec
- Z Scale: adjustable
- Z Angle: 10-170° adjustable
- Zoom
- Display mode
  - Dual Display
  - Quad Display
  - Full Display
- Save images

Integrated Data Management System

→Hard Disk memory capacity: 160 G

→Storage media

- USB Drive

Storage of Images and Cine

- Cine loop: 10000 frames or more
- Cine loop time:60 seconds or more
- Real time single/dual static and dynamic Image storage

- Archived image can be viewed on PC
- Cropboard function: in Freeze Mode
- Cine play back mode for Dop.
- Doppler Cine Sound Play Back Function

DICOM Network Communication

- Conformity to DICOM Standard: Service class user of storage, (for details, please refer to the DICOM conformance statement issued by SonoScape.)
- Storage: Directly transmits image with patient information to a DICOM file server

Physiological Signal Display

- ECG, Pulse wave
- ECG Lead-three lead system
- ECG Gain: adjustable
- ECG Position: adjustable
- ECG Invert:on/off
- R-Trigger:on/off
  - Trigger Delay: adjustable
  - Frame Count: adjustable

User Interface

Operator Keyboard

- Alphanumeric Keyboard
- Shortcuts Keyboard
- Integrated Recording Keys for Remote Control of Peripheral Devices and DICOM Devices
- 8 TGC Pods
- Integrated function key

Character and icon

- Character Input Area: ID, Name, DOB,Sex, Weight, Height, LMP etc
- Body Mark:52 kinds

Electrical Power

- Voltage:100/220 Volts AC
- Current: 3.15 Amps
- Frequency:50/60Hz

Display Screen

- 15-inch High-Resolution Color LCD monitor
- Contrast and bright: 0-100 changeable

Environmental Requirements

In operation

- Temperature:+10 to +40 degrees C
- Relative Humidity: 30% to 75% (non condensing)
- Atmospheric pressure: 700 to 1060hPa

In Storage/Transportation

- Temperature: -20 to +55 degrees C
- Relative humidity: 20%- 90% (non condensing)
- Atmospheric Pressure: 700 to 1060hPa

Probe Connectors

- Active Connectors: 2 connectors

Optional Probe

- Phased Array Probe（Cardiology）
  →2P1 （1.9-6 MHZ）
  →5P1 （4.2-11 MHZ）
- Linear Probe（Vascular, Small Part）
  →L741 （5-16 MHZ）
  →L742 （4.5-15 MHZ）
  →10L1 （4.5-15 MHZ）
  →L541 （3.7-8 MHZ）
- Curved Probe（Abdomen, OB/GYN）
  →C344 （2-7 MHZ）
  →C542 （3.7-11 MHZ）
- Micro-curved Probe（Transvaginal）
  →6V1 （3.9-15 MHZ）
- Micro-curved Probe（Cardiology）
  →C311 （2-6 MHZ）
  →C611 （4-13 MHZ）
- Linear,Surgical（Surgery）
  →10l2 （4-15MHZ）

Measurements/Calculations

- **General Measurements/Calculations**

  On B-Mode

  →Distance（real time、freeze）
  →Area and circumference (Trace, Ellipse)
  （real time、freeze）
  →Volume (L×W×H,Area×L)
  →Angle

  On M-Mode

  →Velocity
  →Distance
  →Time
  →Heart rate
  →Slope

  On Spectral Doppler

  →Time Interval
  →Velocity
  →Velocity Ratio
  →Velocity Time Integral
  →Heart Rate
  → Velocity
  →Acceleration
  →Resistance Index
  →Pulsatility Index
  →Pressure half time
  →PV(peak Velocity)
  →Mean Flow Velocity
  →End diastolic Velocity
  →PG((Pressure gradient)
  →Auto Trace
  →Manual trace

  On Color Mode

  →Color Flow Velocity
  →Doppler Area
  →Proximal Isovelocity surface area

- **Obstetrical/ Gynecological Measurements & Calculations**

B Mode

→GS (Gestational Sac diameter)

→CRL (Crown Rump Length)

→BPD (Biparietal Diameter)

→HC (Head Circumference)

→AC (Abdominal Circumference)

→FL (Femur Length)

→CER (Cerebellum)

→OFD (Occipitofrontal Diameter)

→Fibula (Fibula Length)

→Foot (Foot Length)

→AA (Abdominal Area)

→APAD (Anteroposterior Abdominal Diameter)

→HA (Head Area)

→Humerus (Humerus Length)

→Kidney (Kidney Length)

→APTD (Anteroposterior Trunk Diameter)

→OOD (Outer Orbital Diameter)

→Radius (Radius Length)

→TAD (Transverse Abdominal Diameter)

→TC (Thoracic Circumference)

→THD (Thoracic Diameter)

→Tibia (Tibia Length)

→TTD (Transverse Trunk Diameter)

→Ulna (Ulna Length)

→Umb VD (Umbilical Vein Diameter)

→NT (Nuchal Translucency)

→LV (Lateral Ventricle)

→UT L (Uterus Length)

→UT H (Uterus Height)

→UT W (Uterus Width)

→Cx (Cervix)

→En-T (Endometriosis)

→Rt OV L (Right Ovary Length)

→Rt OV H (Right Ovary Height)

→Rt OV W (Right Ovary Width)

→Lt OV L (Left Ovary Length)

→Lt OV H (Left Ovary Height)

→Lt OV W (Left Ovary Width)

→AFI (Amniotic Fluid Index)

→HIP（Hip Joint）

→Dominant Follicle

→EFA(Estimated Fetal Age)

→EDD(Estimated Date of Delivery)

→EFW（Estimated Fetal Weight)

→AUA(Average Ultrasound Age)

→Fetal HR(Fetal Heart Rate)

PW Mode

→Umb A (Umbilical Artery)

→MCA (Middle Cerebral Artery)

→Rt Uterin A (Right Uterine Artery)

→Lt Uterin A (Left Uterine Artery)

→Fetal AO (Fetal Aorta)

- **Cardiac measurements**

B-Mode

→Left Ventricular Fuction Measurement

- Single Plane Ellipse Method
  - LVALd: Left Ventricular Long-axis

Area at end Diastole
- LVLd: Left Ventricular Long-axis Length at end Diastole
- LVALs: Left Ventricular Long-axis Area at end Systole
- LVLs: Left Ventricular Long-axis Length at end Systole

- Biplane Ellipse Method
  - LVALd: Left Ventricular Long-axis Area at end Diastole
  - LVALs: Left Ventricular Long-axis Area at end Systole
  - LVAMd: Left ventricular short-axis area at end diastole
  - LVIDd: Left ventricular short-axis diameter at end diastole
  - LVAMs: Left ventricular short-axis area at end systole
  - LVIDs: Left ventricular short-axis diameter at end systole
- Bullet
  - LVAMd: Left ventricular short-axis area at end diastole
  - LVAMs: Left ventricular short-axis area at end systole
  - LVLd: Left ventricular long-axis length at end diastole
  - LVLs: Left ventricular long-axis length at end systole
- Simpson Method
  - LVAMD: Left ventricular short-axis area at end diastole
  - LVAMs: Left ventricular short-axis area at end systole
  - LVAPd: Left ventricular short-axis area at the level of the papillary muscle at end diastole
  - LVAPs: Left ventricular short-axis area at the level of the papillary muscle at end systole
  - LVLd: Left ventricularlong-axis length at end diastole
  - LVLs: Left ventricular long-axis length at end systole
- Cube
  - IVSTd: Interventricular septal thickness at end diastole
  - LVIDd: Left ventricular short-axis diameter at end diastole
  - LVPWd: Left ventricular posterior wall thickness at end diastole
  - IVLTs: Interventricular septal thickness at end systole
  - LVIDs: Left ventricular short-axis diameter at end systole
  - LVPWs: Left ventricular posterior wall thickness at end

systole

- Teichholz
  - LVLDd: Left ventricular short-axis diameter at end diastole
  - LVIDs: Left ventricular short-axis diameter at end systole
- Gibson
  - LVLDd: Left ventricular short-axis diameter at end diastole
  - LVIDs: Left ventricular short-axis diameter at end systole
- Biplane Disk
  - Diastole 2CH
  - Diastole 4CH
  - Systole 2CH
  - Systole 2CH

→Mitral Valve Diam

→Lv Outflow Diam

→Pul.Valve Diam

M-Mode

→Left Ventricular Fuction Measurement

- Cube
  - LVIDd: Left ventricular short-axis diameter at end diastole
  - LVIDs: Left ventricular short-axis diameter at end systole
  - LVPWd: Left ventricular posterior wall thickness at end diastole
  - LVPWs: Left ventricular posterior wall thickness at end systole
- Gibson
  - LVLDd: Left ventricular short-axis diameter at end diastole
  - LVIDs: Left ventricular short-axis diameter at end systole
- Teichholz
  - LVLDd: Left ventricular short-axis diameter at end diastole
  - LVIDs: Left ventricular short-axis diameter at end systole

→Mitral Valve Measurement

→Aortic Valve Measurement

PW-Mode

→Mitral Valve Measurement

→Aortic Valve Measurement

→Tricuspid Valve Measurement

→Pulmonary Valve Measurement

→TEI Index Doppler Measurement

- **Vascular Measurements Calculations**

→ICA (Internal Carotid Artery)

→ECA (External Carotid Artery)

→CCA (Common Carotid Artery)

→INT IL (Internal iliac)

→EXT IL (External iliac)

→ILIAC (Common iliac)

→CFA (Common Femoral Artery)

→PROFUN (Profunda)

→LT CIR (Lateral Circumflex)

→SFA(Superficial Femoral Artery)

→POP (Popliteal Artery)

→PTA (Posterior Tibial Artery)

→PERON (Personal Artery)

→ATA (Anterior Tibial Artery)

→DR PED (Dorsalis Pedis)

→%A REDUC (Area reduction percent)

→%D REDUC (Diameter reduction percent)

→PI (Pulsatility Index)

→RI (Resistive Index)

→S/D (Systolic/Diastolic Ratio)

→PG((Pressure gradient)

→PV(peak Velocity)

→IMT

- **Urological Measurements &Calculations**

→Left Kidney

→Right Kidney

→Left-Renal Cortex

→Right-Renal Cortex

→Left-Adrenal Gland

→Right- Adrenal Gland

→Bladder Volume

→Residual Urine

- Urine Area
- Urine Height

→Whole Prostate Volume

→Trans Zone Volume

→Left-Seminal Vesicles

→Right- Seminal Vesicles

→Left-Testicle

→Right-Testicle

- **Small Part Measurements**

→L-Thyroid

→R-Thyroid

→Thyroid Isthmus

→L-Superior Parathyroid

→L-Inferior Parathyroid

→R-Superior Parathyroid

→R-Inferior Parathyroid

- **Report functions**

→Obstetrical /Gynecological report （revisability）

- Obstetrical Curve
- Fetal Anatomy
- Biophysical Profile
- Fetal Compare
- Picture
- Comment

→Cardiac function report（revisability）

→Vascular report

→Urological report

→Small Part report

→IMT Report