Sonosite ST Specifications

General System and Stand Specifications

(Dimensions width x height unless otherwise stated)

Stand Footprint:

Width Length

58.4 cm 25 4 in 64.5 cm

Maximum Height (monitor raised):

68 in/ 172.6 cm

Minimum Height (monitor lowered):

53.75 in/ 136.5 cm

Height Adjustment Range:

9.6 in/ 25 cm

Clinical Monitor Tilt:

0 to 60 degrees (0 degrees tilting forward from vertical, 60 degrees tilting back from vertical)

Weight:

109.3 lbs. (49.6 kg) with the L15-4 transducer and battery installed

Casters:

4 inch Swivel, 4 Locking

User Interface:

Projected Capacitive (PCAP) Touch Screen

Clinical Monitor Size:

21.3 in/ 54.1 cm

Clinical Monitor Display Size:

17.01 x 12.76 in/ 43.2 x 32.4 cm

Clinical Monitor Image Size:

10.03 x 7.53 in/ 25.49 x 19.12 cm

Clinical Monitor Resolution (minimum):

Display Size Image Size

1600 x 1200 px 944 x 708 px

Transducer Connections:

2 x connections

Operating System:

Windows 10 IoT Enterprise 2019 LTSC

Hard Drive Capacity:

128 GB

System Boot Up:

< 40 seconds

Architecture:

Digital broadband

Dynamic Range:

Up to 183 dB

Greyscale:

256 grey shades

HIPAA Compliance:

Meets Federal Information Processing Standards (FIPS) for Moderate security control selections per FIPS199, FIPS200, and NIST 800-53.

Durability:

The transducers shall withstand a drop from a height of 1 metre. The system shall be safe and function normally after this drop.

Warranty & Service

5-year standard warranty on the system

5-year standard warranty on C5-1, C10-3 IC10-3, L19-5, L12-3, L15-4, and P5-1 transducers

1-year standard warranty on stand

1-year standard warranty on batteries and accessories

carrying the manufacturer's label excluding the system.

Provide a service loaner system engine within 24 hrs, where available (24 hour shipping not available in all geographic locations)

Imaging Modes

2D/B-Mode **Broadband Imaging** Tissue Harmonic Imaging **Pulse Inversion Harmonic Imaging**

M-Mode

Colour Velocity Doppler (CVD) Colour Power Doppler (CPD) Colour Variance (Cardiac only)

Licensed option

Pulsed Wave Doppler (PW) Tissue Doppler Imaging (TDI) (Cardiac Only) Continuous Wave Doppler (CW) (Cardiac Only)

B-Mode Imaging

Support imaging frame rates up to 100Hz

8x live Read Zoom capability

4x Frozen post-processing Zoom

Dual Imaging

Write Zoom on C5-1, C10-3, IC10-3, and P5-1 transducers (Abdomen, OB, Early OB, Gynaecology, Prostate and Cardiac exam types only)

Centerline graphic on display for linear and curvilinear transducers

On-screen needle guide support for IC10-3 and L19-5 transducers

Auto Gain adjust and reset

Procedure Mode

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B-Mode Controls:

Depth, Gain, Time Gain Compensation (TGC), Auto Gain, SonoMB, 2D Mode THI, 2D Image Optimisation (Res, Gen, Pen), Dynamic Range (Live and Frozen), Image Orientation (U/R, U/L, D/L, D/R), Sector Width Control (Steerable, Cardiac Only), Thermal Index (TIS/TIB/TIC), LVO, Output Power Control

Screen Depth: 1 – 35 cm

B-Mode Imaging Features:

Sonosite proprietary speckle reduction algorithm

SonoADAPT Imaging Technology: Adjusts imaging parameters based on depth eliminating complicated manipulation of multiple controls.

SonoMB: Multi-beam technology to effectively reduce speckle artifact, enhance tissue contrast, and improve border detection.

Auto Steep Needle Profiling

(Available for these transducers and exams)

C5-1: MSK, Nerve, Spine

L19-5: Arterial, MSK, Nerve, Superficial, Venous, PIV

L12-3: Arterial, Breast, Carotid, MSK, Nerve, Superficial, Venous, PIV

L15-4: Arterial, Breast, Carotid, MSK, Nerve, Superficial, Venous

M-Mode Imaging

M-Mode Controls:

Depth, Gain, Time Gain Compensation (TGC), Auto Gain, SonoMB, THI, Image Optimisation (Res, Gen, Pen), Dynamic Range (Live and Frozen), M-mode Sweep Speed

M-Mode Display Format:

1/3 and 2/3, 1/2 and 1/2, 2/3 and 1/3, and side by side

Colour Imaging

Max PRF used is 16667Hz

Colour Modes:

Colour Velocity Doppler, Colour Power Doppler, Colour Variance (Cardiac Only)

Colour Controls:

Colour Gain, Colour Scale, Colour Invert, Colour Flow Optimisation (High, Mid, Low), Colour Wall Filter, Colour Steer Angle (Linear only), Adjust Colour box size and position, Colour Baseline, Colour Compare, Hide/ Show Colour

User Interface and

Programmable Controls

Clinical Display Information

Virtual QWERTY Keyboard

Touch Panel:

Projected Capacitive (PCAP) Touch Screen User

Interface Touch Screen Main Controls:

TGC (Time Gain Compensation), Gain Slider, Depth, Cine Slider, Save Clip, Save Image, Freeze, Colour, M-Mode, and 2D

Configurable Start Screen:

Start, Scanning, Transducer/Exam Selection, Patient Information

User Defined Exam Types:

Imaging mode settings and on-screen exam specific optimisation locations

On-board Education

How-To Videos:

Imaging Basics, Transducers

Scan-Along Education Tutorials:

Over 150 in English, French, German, Spanish, Japanese, Italian, and Mandarin

Tutorial Categories:

Acute Care, Anaesthesia, Pain Management, Obstetrics/ Gynaecology, Procedures, and Musculoskeletal

Scan-along Educational Tutorials

Anaesthesiology

Abdomen

II/IH Block, Rectus Sheath, TAP, Quadratus Lumborum

Thorax

Paravertebral, Airway, Erector Spinae, PECS I & II

Lower Extremity

Adductor Canal, Femoral, Popliteal Sciatic, Saphenous, Subgluteal Sciatic

Upper Extremity

Axillary, Infraclavicular, Interscalene, Median & Ulnar, Supraclavicular

Pain Management:

Caudal, Stellate Ganglion, Suprascapular Nerve Block, II/IH Block

Obstetrics & Gynaecology:

Gynaecology

Ovarian Cyst-TA, Pelvis-TA

Obstetrics

1st Trimester OB- TA, 1st Trimester OB- TV, AFI, Amniocentesis, Ectopic-TA, Ectopic-TV, Fetal Biometry, Fetal Viability

Procedures:

Vascular Access

Femoral Artery, Femoral Vein, IJV Long, IJV Transverse, PICC, Radial Artery, Subclavian Axillary

Other Procedures

Abscess Drainage, AFI/Amniocentesis, Foreign Body, Lumbar Puncture, Paracentesis, Pericardiocentesis, Thoracentesis

Acute Care:

eFAST

Lung Linear Array, Lung Phased Array, Left Upper Quadrant, Pelvis, Right Upper Quadrant, Subxiphoid

eFAST Pathology

Left Upper Quadrant Free Fluid, Pelvis Free Fluid, Right Upper Quadrant Free Fluid, Subxiphoid Free Fluid

Cardiac

Apical, PSAX Heart, PLAX Heart, Subxiphoid

Cardiac Pathology

Infective Endocarditis, Tamponade

Lung/Thorax and Pathology

Airway, Lung, 12 Point Lung Exam, Pleural Effusion, Pneumonia, Pneumothorax, Pulmonary Edema

Abdomen

Aorta, Gallbladder Evaluation, Inferior Vena Cava, IVC Volume Status, Left Kidney, Right Kidney

Abdomen Pathology

AAA, Appendicitis, Cholecystitis, Cholelithiasis, Hydronephrosis, Pyloric Stenosis, Renal Calculus

Pelvis

Bladder Volume, Pelvis-TA, Ovarian Cyst-TA, Testicular Torsion

Head/Neck and Pathology

Airway, Ocular, ICP, Retinal Detachment, Thyroid Evaluation

Extremity

DVT, Long Bone Fracture, Tibia

COVID-19:

eFAST

Lung Linear Array, Lung Phased Array, Left Upper Quadrant, Pelvis, Right Upper Quadrant, Subxiphoid

eFAST Pathology

Left Upper Quadrant Free Fluid, Pelvis Free Fluid, Right Upper Quadrant Free Fluid, Subxiphoid Free Fluid

Cardiac

Apical, PSAX Heart, PLAX Heart, Subxiphoid

Cardiac Pathology

Infective Endocarditis, Tamponade

Lung/Thorax and Pathology

Airway, Lung, 12 Point Lung Exam, Pleural Effusion, Pneumothorax, Pneumonia, Pulmonary Edema

Abdomen

Aorta, Gallbladder, Inferior Vena Cava, IVC Volume Status, Left Kidney, Right Kidney

Head/Neck and Pathology

Airway

Extremity

DVT

Procedures

Pericardiocentesis, IJV Transverse, Subclavian Axillary

Musculoskeletal:

Shoulder/Rotator Cuff

Infraspinatus, Rotator Cuff, Rotator Cuff Tear, Tendinosis, Subscapularis Tendon, Supraspinatus Tendon

Shoulder — Other

AC Joint, AC Impingement, Biceps Tendon, Glenohumeral Joint, Posterior Groove

Shoulder Injections

AC Joint, Lateral Shoulder, Median Shoulder

Elbow

Anterior Recess, Cubital Tunnel, Distal Biceps Tendon, Elbow Olecranon, Elbow Ulnar Nerve, Lateral Aspect, Median Aspect

Elbow Pathology

Distal Biceps Tendon Tear, Lateral Epicondylitis, Ulnar Nerve Comp

Wrist/Hand and Pathology

Guyon's Canal, Wrist Ulnar Nerve, Volar, Carpal Tunnel, DeQuervain's, Median Nerve Entrapment, Trigger Finger

Hip/Pelvis Injections

Proximal Hamstring, Pubic Symphysis, Sacroiliac Joint

Knee

Iliotibial Band, Infrapatellar Tendon, LCL, MCL, Meniscus, Quadriceps Tendon, Tibia

Lower Extremity Injections

Achilles Tendon, Baker's Cyst, Lateral Knee, MCL, Medial Knee, Patellar Tendonosis, Achilles Tendon Tear, Plantar Fasciitis

Ankle/Foot and Pathology

Ankle Ext Tendons, Ankle Flexor Tendons, MTP Joint, Tarsal Joint, Achilles Tendon Tear, Plantar Fasciitis



How-to Videos

Transducers:

Transducer Types, Orientation Marker

Image Terms:

Terminology

On-board Image and Clip Storage Review

Thumbnail review of saved images and clips

2D Cine Review:

Minimum 10 seconds (or until number of frames fill up the 384 MB cine memory)

M-Mode Cine Review:

Minimum 2 cine frame (slow sweep 23 seconds, fast sweep 6 seconds)

Internal Memory:

128 GB

Maximum Number of Clips/Images per Study: 500

Maximum Number of Studies:

Approximately 700 with an average of 30 clips/images per study

Report Export Format:

PDF

Image/Clip Export Format:

JPEG, BMP and MP4

Clip Store:

Prospective and retrospective

Video Clip Playback:

1, 1/2, 1/4 of captured rate

Video Clip Save Lengths:

2, 3, 4, 6, 10, 15, 30, 60 seconds (Retrospective/Prospective)

DICOM Export to USB:

JPEG, BMP, and MP4

JPEG Compression Options:

High, Medium and Low

Worksheets

Acute Care Worksheets:

Aorta, Appendix, Bladder, Cardiac, Deep Vein Thrombosis (DVT), eFAST, FAST, Gallbladder, Generic, Gynaecology, Musculoskeletal, Obstetrics 2nd/3rd Trimester, Obstetrics 2nd/3rd Trimester Multiple, Obstetrics, Ocular, Renal, Soft Tissue, Thoracic

Procedures:

Abscess Drainage, Arterial Line, Arthrocentesis, Central Venous Line, Paracentesis, Pericardiocentesis, Peripheral Venous Line, Peritonsillar Abscess Drainage

Customisable Worksheets:

Available with Sonosite Synchronicity workflow manager integration

Labeling

Predefined labels and pictograms Up to 5 arrows On-screen keyboard label entry

Labeling Packages

MSK, Foot, Ankle, Knee, Hip, Shoulder, Elbow, Wrist, Hand, Spine, Nerve

Breast, Superficial, Ophthalmic

Transcranial, Carotid, Arterial, Venous

Abdomen, eFAST, Lung, Focused Cardiac, Cardiac Gynaecology, Early OB, Focused OB, OB, Prostate

Basic Measurements

2D Measurements:

Distance (10 Measurements), Curved Distance, Area, Circumference, Ellipse, Manual Trace, Volume, Target Depth, Angle

M-Mode Measurements:

Distance, Time, Slope, Heart Rate

Calculation Packages

Abdomen

2D Calculations and Measurements:

Bladder Volume, Post-Void Bladder Volume, IVC Collapse, Aorta, CBD, CHD, Gallbladder, Liver, Spleen and Renal

M-Mode Calculations:

IVC Collapse

Cardiac

2D Cardiac Calculations and Measurements:

Teichholz Ejection Fraction, Fractional

Shortening, Simpson's method of discs for single and biplane ventricular volumes and ejection fraction, Left and Right Fractional Area Change, Planimetry for Valve Area (AVA, MVA), Vena Contracta (AV, MV), LV Mass, LV Mass Index, LA/Ao, IVS FT, LVPW FT, LA Single and Biplane Volume, LA Biplane Volume Index, LA Area, RA Simpson's Volume, RA Volume Index, LV Dimensions, RV Dimensions, Aorta Dimensions, IVC Collapse, IVC Distensibility Index

M-Mode Cardiac Calculations and Measurements:

Teichholz Ejection Fraction (EF), Fractional Shortening, RVDd, LV Dimensions, TAPSE, MAPSE, EPSS, IVC Collapse, IVC Distensibility Index, D-E Slope, E-F Slope, Aortic Cusp Separation, LVET, IVS FT, LVPW FT, LV Mass, LV Mass Index, IVSd/LVPWd, IVSs/LVPWs, LA/Ao, Heart Rate

Gynaecology and Obstetrics

Biophysical Profile

2D Gynaecology Calculations and Measurements:

Ovary Volume (right and left), Endometrium, Uterus Volume, 10 Follicular Measurements (right and left)

2D Early Obstetrics Calculations and Measurements:

YS, Mean Gestational Sac, NT, CRL, BPD, Myometrial Mantle, Cervical Length, EDD by LMP, EDD by AUA, GA by EDD, GA by LMP, AUA, Ovary Volume (right and left)

2D Obstetrics Calculations and Measurements:

BPD, OFD, HC, AC, FL, Cerebellar Diameter, Cisterna Magna, OOD, IOD, Lateral Ventricle, Cervical Length, Amniotic Fluid Index, EDD by LMP, EDD by AUA, GA by LMP, GA by EDD, AUA, EFW, EFW Percentile, HC/AC, FL/BPD, FL/HC, FL/AC, Cephalic Index (HC)

M-Mode Calculations:

FHR

User-Selected Gestational Age References:

GS, CRL, BPD, OFD, HC, AC, FL

Multiple Gestation Package:

Quads

Small Parts and Musculoskeletal

2D Calculations:

d:D hip ratio, hip angles

DICOM Image Management

Supported SOP Classes:

Verification Ultrasound Image Storage Ultrasound Multi-frame Image Storage Secondary Capture Image Storage Modality Worklist Information Model - FIND Modality Performed Procedure Step Storage Commitment Push Model Basic Text SR

Comprehensive SR

Store, Modality Worklist, Modality Perform Procedure Step (MPPS), Storage Commitment

Basic Text and Comprehensive Structured Reports (SR)

DICOM USB export

DICOM compliant

Allow saving DICOM configuration via USB for easy replication or restoration

DICOM TLS Secure Transport Connection Profile Support



Connectivity and External Data Management

1080p digital video output (compatible with 1080p displays) – stand only

2 USB 2.0 Ports (stand only)

2 USB 3.0 Ports (system engine)

1 USB Port for optional printer

Ethernet Port

Storage capacity alert if internal storage is less than 10%

Study data Auto Delete function

Automatic time setting by synchronisation with network time server

 $\ensuremath{\mathsf{IPv6}}$ and $\ensuremath{\mathsf{IPv6}}$ Networking (DHCP, SLAAC, and static addressing)

Optional Medical Informatics

Onboard QView application for QPathE

Integration of optional Sonosite Synchronicity workflow manager for credentialing, POCUS billing, and customisable worksheets

Barcode Expressions: Sonosite barcode scanner customisation software (English only)

Wireless Solutions

2.4GHz and/or 5GHz Embedded Wireless Option:

Wireless Protocols supported: 802.11a/b/g/n/ac

Wireless Roaming supported: 802.11k and 802.11r (with FT-802.1x authentication only / without support for FT-PSK)

802.11i Shared Key Authentication

Key management protocols:

WPA/WPA2 Personal

WPA/WPA2 Enterprise (EAP-TLS, EAP-PEAP)

RADIUS (EAP-TLS, EAP-PEAP)

Encryption protocols:

AES (Advanced Encryption Standard) TKIP (Temporal Key Integrity Protocol)

FIPS 140-2 wireless security mode

Shared Key authentication

802.11i

Wireless Protocols supported

802.11a/b/g/n/ac

Wireless Roaming supported

802.11k and 802.11r (with FT-802.1x authentication only / without support for FT-PSK)

Data Security

System meets Federal Information Processing standards (FIPS) for moderate security control selections per FIPS199, FIPS200, and NIST 800-53

Secure Boot

User and role-based authentication

LDAP support

Supported Wi-Fi Security Policies: Open, Radius, WPA, WPA2

Complex Password Rules: Complex passwords, minimum password length, automatic password aging, and password history re-use limit rules

Federal System Use Notification

Password Protection: username and password capability

Guest mode support

DICOM TLS Secure Transport Connection Profile support

Data encryption for data at rest and in transit: FIPS 140-2

System wide white-listing

Hardened OS and services

System firewall

MDS2 listed on sonosite.com

Admin User Settings

Manage, import, create, edit and delete user profiles Connectivity settings including network status Configure connection to directory server, manage password requirements

Data security mode, data import and export control,

create notifications

Audio and display settings Date, Time and Time Zone

Power and battery settings

System and Log Information

Stand & Storage

Adjustable stand height 2 transducer holders Dual Transducer Connect Stand Battery Dedicated holders for disinfectant wipes and gel Large storage basket Lockable drawer AC cord retainer I/O connections

Optional Accessories

Medical grade B&W printer Barcode Scanner PowerPark

Battery Management

System operates via battery or AC power

Battery charge indicator light on rear of clinical monitor Battery charge indicator on clinical display Battery Charge Warning: At charge of 5 minutes of charge left or lower

System Batteries

Battery Life: 2+ hours with stand battery Battery Charging Time: Charges from 15 - 80% in 2 hours 35 minutes Battery: Rechargeable lithium-ion Internal Battery Capacity: 129.6 Watt hours Additional Stand Battery Capacity: 259.2 Watt hours Battery Lifecycle: 80% capacity after 500 charge cycles

Stand Rating

Power Input: 100-240 VAC, 50-60 Hz, 6.0-2.5 A Power Output (for optional printer): 100-240 VAC, 50-60 Hz, 2.5-1.0 A

Heat Output

While operating and charging (max power): 200W - 682 BTUs While operating: 120W - 409.2 BTUs

Infection Control Standards

Cleaners and Disinfectants Tool located on sonosite.com Cleaning Mode available for ease of disinfection System work surface is sealed edge-to-edge Transducers are IPX7 rated for immersion

Environmental Limits for System, Transducer, and Battery

Operating Limits: Temperature: 32-104°F (0-40°C) Humidity: 15-95% relative humidity (R.H.) Atmospheric Pressure: 700-1060 hPa (0.69-1.05 ATM) **Storage Limits:** Temperature: -31-149°F (-35-65°C) Humidity: 5-95% relative humidity (R.H.) Atmospheric Pressure: 500-1060hPa (0.5-1.05 ATM)

Supported Languages

System User Interface Languages:

English, French, German, Italian, Spanish, Japanese, and Simplified Chinese

Transducers

C5-1

Exam Types: Abdomen, Gynaecology, Lung, Nerve, Musculoskeletal, Early Obstetrics, Obstetrics, Spine

Bandwidth: 5 - 1 MHz

Size: 60 mm

Scan Depth: 4.7 - 30 cm

Elements: 128 Optional Needle Guide Starter Kit: CIVCO Infiniti Plus™ variable-angle, in-plane guide

C10-3

Exam Types: Abdomen, Gynaecology, Lung, Nerve, MSK, Spine

Bandwidth: 10 - 3 MHz

Size: 35 mm

Scan Depth: 3 - 18 cm

Elements: 128

Optional Needle Guide Starter Kit: CIVCO Infiniti Plus[™] variable-angle, in-plane guide

IC10-3

Exam Types: Gynaecology, Early Obstetrics, Obstetrics, Prostate

Bandwidth: 10 - 3 MHz

Size: 26 mm

Scan Depth: 3 - 15 cm

Elements: 128

Optional Needle Guide Starter Kit: CIVCO Disposable Endocavity Needle Guides

L19-5

Exam Types: Arterial, Lung, Musculoskeletal, Nerve, Ophthalmic, Superficial, Venous, PIV

Bandwidth: 19 - 5 MHz

Size: 20 mm

Scan Depth: 1 - 6 cm

Elements: 128 Optional Needle Guide Starter Kit: CIVCO Infiniti Plus[™] variable-angle, in-plane guide and AccuSITE[™], out-of-plane guide

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L12-3

Exam Types: Arterial, Breast, Carotid, Lung, Musculoskeletal, Nerve, Ophthalmic, Superficial, Venous, PIV

Bandwidth: 12 - 3 MHz

Size: 38 mm

Scan Depth: 1.5 - 9 cm

Elements: 192

Optional Needle Guide Starter Kit: CIVCO Infiniti Plus™ variable-angle, in-plane guide

L15-4

Exam Types: Arterial, Breast, Carotid, Musculoskeletal, Nerve, Superficial, Venous

Bandwidth: 15 - 4 MHz

Size: 50 mm

Scan Depth: 1.5 - 6 cm

Elements: 256

Optional Needle Guide Starter Kit: CIVCO Infiniti Plus[™] variable-angle, in-plane guide

P5-1

Exam Types: Abdomen, Cardiac, Focused Cardiac, Lung, Obstetrics, Orbital, Transcranial Doppler (TCD)

Bandwidth: 5 - 1 MHz

Size: 19 mm

Scan Depth: 5 - 35 cm

Elements: 64



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