



**ACUSON X300 Ultrasound System**

# ACUSON X300 Ultrasound System

## GENERAL INFORMATION

The ultra-portable ACUSON X300™ ultrasound system brings the benefits of migrating Siemens core technologies to an entirely new level of diagnostic performance and workflow efficiency in the world of compact, mobile, color Doppler ultrasound systems. The X300 system combines best-in-class image quality and a robust set of features to meet daily clinical needs. It enhances diagnostic confidence with high quality color and power Doppler, 2D imaging, steerable, continuous wave and pulse-wave Doppler capabilities. It also provides a pathway to seamlessly integrate future technology advancements.

## SYSTEM ARCHITECTURE

All-digital signal processing and multibeam formation technology provides best-in-class 2D and Doppler image quality for greater diagnostic confidence.

The DIMAQ-IP integrated workstation provides digital acquisition, storage, review and transfer of ultrasound studies. Studies can be reviewed and quantified on-board, stored on the system hard drive and transferred to the built-in DVD Dual Drive (DVD-R/RW & CD-R/RW) or USB flash drive for cost-effective archival.

The all-digital system architecture enables seamless integration of optional features to enhance productivity such as both filtering and phase inversion Tissue Harmonic Imaging™ (THI) and TGO™ tissue grayscale optimization technology, connectivity solutions such as DICOM Print/Store, DICOM Worklist, DICOM MPPS and DICOM OB and Cardiac structured reporting and additional functionality such as 3-Scape™ real time 3D imaging and integrated stress echo.

## User Interface

- Intuitive PC-based operating principles
- User-centric control panel with HomeBase layout
- On/Off task light and back-lit illumination of control panel



- Variable brightness indicates active state of function keys
- On-screen Menu (OSM) provides easy and immediate access to secondary imaging controls
- Easy accessible, full size QWERTY keyboard for text entry, function keys and system programming
- Thumbnail Menu, Support thumbnail images and CLIPs on the right side of monitor screen.
- Wrist support help reduce operator repetitive stress injuries
- Height adjustment of control panel
  - 100 mm up/down with lock lever
- Articulating monitor arm to help improve ergonomics
  - Arm rotate: -90 to +90 degrees
  - FPD rotate: -80 to +80 degrees
  - Tilt: -75 to +10 degrees
  - Up: 125 mm
  - Pull: 250 mm
- Wheel-lock mechanism
  - Front Castor (2 ea): Bi-Brake System (Direction Lock & Total Lock)
  - Rear Castor (2 ea): Total Lock
- Up to 32 QuickSet™ user-programmable system parameters allow users to program system parameters for individual transducer/application settings. QuickSet parameters combine all preferred imaging mode parameters, annotation text and measurements into one user preset

## Language Support

- On-screen text, control panel overlay and operating instructions are all available in English, French, German, Spanish, Italian, Chinese and Russian
- Additional Instructions for Use are available in the following languages — Czech, Danish, Dutch, Estonian\*, Finnish, Greek, Hungarian, Japanese, Korean, Latvian\*, Lithuanian\*, Norwegian, Polish, Portuguese, Slovak, Slovenian\*, Swedish

*\*The Instructions for Use are available upon request only.  
Allow 8 weeks minimum for production*

## Monitor

- Flat Panel Display, 15-inch color, high resolution, and progressive scan (non-interlaced) with in plane switching (IPS) technology
- Resolution, 1024 x 768 pixels
- Total screen area 1024 x 768. Recordable image area clips 800 x 600. Total screen capture is an option
- Monitor tilt of 10 degrees up, 75 degrees down and swivel of -80 to +80 degrees
- Digital on-screen display of brightness and contrast controls
- Energy Saving Display Power Management
- 4 levels of illumination intensity: Off, 1, 2, 3

## Audio Speakers

- High performance audio speakers integrated in monitor

## Physiological Interface

- Standard 3-lead ECG interface
- Continuous display in all real-time modes
- R-Wave single and dual trigger function
- Heart rate display
- Adjustable gain and trace position on screen
- Selection for external ECG input

## Hard Drive

- Internal 80 GB hard drive for patient database management

- Allows storage of patient studies that include images, reports and measurements
- Image storage capacity up to 95,780 images with compression: color or black/white

## DVD Dual Drive (DVD-R/RW & CD-R/RW)

- Removable 650 MB, 700 MB and 790 MB CD-R and 650 MB or 700 MB CD-RW
- Removable 4.7 GB single layer DVD and 8.5 GB single side double layer DVD
- Allows storage and archiving of complete patient studies including images, dynamic clips, reports and measurements
- Storage capacity dependent upon patient study size
- Export of images in TIFF and clips in AVI file or DICOM format
- Export of reports in rep and text format
- DICOM viewer for export of DICOM format to CD/DVD only

## Transducer Ports

- Up to three active universal transducer ports that support phased array, curved array and linear array transducers (3rd array port optional)
- The two transducer port configuration has two active and one transducer parking port
- Electronic transducer selection (instantaneous switching between transducers)
- Industrial design provides easy access to the transducer ports

## Transducer Storage

- Six configurable transducer holders support all transducer designs and provide gel bottle storage
- SuppleFlex™ transducer cables and integrated cable management for protection during exams and transport
- Special transducer holder provides secure storage and easy access to endocavity transducer
- Transducer holders can be removed for cleaning

### Acoustic Output Management

- On-screen acoustic power indicator (AIUM/NEMA output display standard)

## OPERATING/DISPLAY MODES

- 2D imaging in fundamental and harmonic modes (both phase inversion and filtered)
- DTI™ Doppler Tissue Imaging capability including 2D, M-mode and Spectral
- Color M-mode
- M-mode
- Color Doppler Velocity mode
- Power Doppler mode
- Directional power Doppler
- PW Pulsed Wave spectral Doppler mode
- CW Continuous Wave spectral Doppler mode (Aux Pencil style and phased array steerable)
- ECG trace in all modes
- Duplex mode
- Triplex mode
- Flexible combination of imaging modes in side-by-side Dual and Dual Select in real-time, and digital cine replay
- Selectable split screen display formats in 2D or 2D/color with M-mode and/or spectral Doppler mode: top-bottom or side-by-side in real-time and digital cine replay
- 4B mode
- Virtual Format

### MultiHertz™ Multiple Frequency Imaging

Siemens' unique MultiHertz multiple frequency imaging is designed to combine the resolution and penetration of several transducers in one. At the push of a button, the user can independently change frequencies for 2D, THI (optional), color and spectral Doppler to select the optimal combination for image resolution, penetration and sensitivity.

- Depending on the transducer, up to 7 user-selectable transmit frequencies are available
  - 3 2D and M-mode frequencies
  - Up to 2 THI frequencies

- Up to 2 PW Doppler frequencies in color, power or pulsed wave modes
- One frequency in SCW Doppler mode

### Beamforming in 2D Imaging Focusing

- New generation all-digital beam former technology enables parallel processing of the RF signal data in the time and amplitude domains
- Patented ASIC technology preserves signal integrity through precision up-sampling for better beam definition
- 2-D mode line density up to 256 lines
- Up to 1024 processing channels
- Total system dynamic range > 150 dB

### Focusing

- Up to 4 transmit focal zones
- Digital dynamic receive focusing with dynamic apodization

### SynAps™ Technology

- Synthetic Aperture technology is available on the CH5-2 and VF10-5 transducers for higher image resolution at depth
- User can turn Synthetic Aperture On and Off

### 2D Image Processing

- All-digital parallel signal processing with frame rates up to 498 F/sec – transducer dependent
- MultiHertz multiple frequency imaging with up to 5 user selectable transmit frequencies, when optional THI is included
- 6 levels Res/Speed selection: 0 – 5
- 5 Persistence levels: 0 – 4
- 4 Edge enhancement levels: 0 – 3
- Display dynamic range: 30 to 70 dB in five-decibel increments
- Adjustable gain from 0 to 60 dB in one-decibel increments
- 8 DGC controls for Depth Gain Compensation
- 9 user-selectable gray maps
- 16 user-selectable 2D colorization maps

## 2D Image Display

- Full screen, Split, Quad and Dual Select screen formats
- L/R flip and U/D flip for all formats in real-time and digital cine replay
- Image depth from 3 to up to 30 cm in 1.0 cm increments – transducer dependent
- Virtual Format Imaging
  - Left/right steer
  - Trapezoid Imaging
- Digital read/write zoom with image pan
  - Available on live and cine replay images
  - Up to 10 x zoom – transducer dependent
- 4B mode

## 2D Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen, live, dual screen and cine playback images
- Up to 8 distance measurements per screen
- Distance and depth measurement from skin line
- Angle measurement
- Area and circumference: ellipse, trace
- Compound Measurements:
  - Volume: user-selectable preset by 1 distance, 2 distance, 3 distance; 1 ellipse and 1 distance
  - Flow volume: 1 velocity and 1 distance, or 1 velocity and 1 ellipse
  - Stenosis: user-selectable preset calculated by 2 ellipse, or 2 distance measurements

## PW Pulsed Wave spectral Doppler

- Available on all imaging array transducers
- Up to 2 user-selectable transmit frequencies per transducer
- 5 sweep speed selections: 1, 2, 3, 4, 5
- 8 selectable post processing gray maps
- 12 user-selectable Doppler colorization maps: 0 – 11
- Adjustable gain from 0 to 90 dB in one-decibel increments
- PRF range: 100 to 19,500 Hz



- Velocity scale range is  $\pm 350$  cm/sec with  $0^\circ$  angle correction
- Angle correction 0 -  $89^\circ$  in one degree increments
- Gate size: from 1.0 up to 20 mm
- 8 wall filter selections – transducer dependent
- 17 levels of baseline shift
- Spectral invert
- Autotrace function

## Steerable Continuous Wave Doppler

- Available on all phased array transducers when basic cardiac package is purchased
- One transmit frequency
- 5 sweep speed selections: 1, 2, 3, 4, 5
- 8 selectable post processing gray maps
- 12 user-selectable Doppler colorization maps: 0 – 11
- Adjustable gain from 0 to 90 dB in one-decibel increments
- PRF range: 1.56kHz to 31.3kHz
- Velocity scale range is  $\pm 350$  cm/sec with  $0^\circ$  angle correction
- 8 wall filter selections – transducer dependent
- 17 levels of baseline shift
- Spectral invert
- Autotrace function

### **SCW and Spectral Doppler Display**

- Full screen Doppler trace, 2D/Doppler mode, triplex or update 2D/C/Doppler
- Four imaging display formats – top-bottom: 1/3-2/3, 1/2-1/2, 2/3-1/3; side-by-side: 40-60

### **Doppler Calipers – Generic Measurements and Calculations**

- Multiple cursor sets on frozen and cine playback images
- Velocity/Frequency/Pressure Gradient
- Heart rate/Heart cycle/Time
- Autotrace measurements and calculations including PS, ED, TAMx, TAMn, PI, RI and S/D
- Resistive Index (RI)
- Pulsatility Index (PI), including Peak-to-Peak method
- Time Average Velocity max (TAV)
- Systolic/diastolic ratio (S/D)
- Velocity Time Integral (VTI)
- Acceleration/Deceleration
- Flow volume using combined velocity and distance, or velocity and ellipse measurements
- Doppler angle correction after measurement

### **Color Doppler Velocity Imaging**

- Available on all imaging array transducers
- MultiBeam Formation technology provides parallel signal processing for high color Doppler frame rates – (transducer dependent)
- Left/right steer on all linear transducers
- Advanced processing in color mode resulting in excellent spatial resolution and superior flash suppression
- Up to 2 user-selectable transmit frequencies per transducer
- Up to 8 user-selectable color velocity maps (6 velocity & 2 velocity/variance)
- Velocity scale range:  $\pm 0.6 \sim \pm 150.4$  cm/sec
- PRF scale range: 100 to 19,500Hz – transducer dependent
- Adjustable gain from -20 to 20 dB in one-decibel increments

- 6 color line density selections
- 4 wall filter selections
- 4 levels of color smoothing
- 5 Tissue/color priority selections
- 5 color persistence levels
- Color invert

### **Power Doppler Imaging**

- Available on all imaging array transducers
- Left/right steer on all linear array transducers
- Up to two user-selectable transmit frequencies per transducer
- Selection of 8 Power Doppler and Directional Power maps
- PRF scale range: 100 Hz to 19,500 Hz – transducer dependent
- Gain: -20 to 20 dB in one-decibel increments
- 6 color line density selections
- 4 wall filter selections
- 4 levels of power smoothing
- 5 Tissue/color priority selections
- 5 color persistence levels

### **Color and Power Doppler Display**

- 2D/C mode, Split 2D-2D/C mode
- Dual real-time 2D/C mode
- 2D/C/D mode (simultaneous triplex), 2D/C/D mode (update)

### **M-Mode**

- Available on all imaging array transducers
- Up to 3 user-selectable transmit frequencies, including fundamental and harmonics
- 4 Edge Enhancement selections
- Display dynamic range: 30 to 70 dB in five decibel increments
- Adjustable gain from 0 to 60 dB in one-decibel increments
- 7 user-selectable gray maps
- 16 user-selectable M-mode colorization maps
- 5 sweep speed selections: 1, 2, 3, 4, 5



### M-Mode Image Display

- Full screen M-mode, 2D/M-mode
- Four imaging display formats – top-bottom: 1/3-2/3, 1/2-1/2, 2/3-1/3; side-by-side: 40-60

### M-Mode Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen and cine playback images
- Distance
- Time
- Slope
- Heart rate

## FREEZE, CINE AND CINE POST-PROCESSING FUNCTIONS

### Cine Review

Cine feature is standard and offers post-acquisition optimization of all real-time post-processing functions.

- Frame-by-frame cine loop review and continuous cine motion review, including control of playback rate
- Independent cine review in mixed modes (2D/M, 2D/Doppler, 2D/C/Doppler)
- Independent cine review in 2D Dual Select mode with image align playback feature
- Maximum Standard Cine Memory is up to 545 frames
- Cine Store: Multiple single frame storage with clipboard review allowing post processing, measurement and annotation functions
- Retrospective clip capture during real-time imaging with a selectable duration of 1, 2, 3, or 4 seconds or a selectable duration 1, 2, 3 or 4 beat capture; ECG triggerable (for OB preset only 1 or 2 seconds and only 1 or 2 beats are available)
- Prospective clip capture during real-time imaging with a selectable duration of 1 to 120 seconds a selectable duration 1 to 120 beat capture; ECG triggerable

### Post Processing Features in Freeze Frame or Cine

- 2D-mode
  - Zoom/pan
  - Gray map
  - 2D-mode colorization map
  - Measurements/reports/annotations/pictograms
- Color
  - Zoom/pan
  - Color map
  - Color invert
  - Measurements/reports/annotations/pictograms
- Doppler
  - Gray map
  - Doppler colorization map
  - Angle correct
  - Measurements/reports/annotations/pictograms
- M-Mode
  - Gray map
  - M-mode colorization map
  - Measurements/reports/annotations/pictograms

## TRANSDUCER TECHNOLOGY

Ultra-sensitive, wideband transducers, matched with user-selectable MultiHertz multiple frequency imaging, improve resolution and penetration. Depending on the transducer, the user can select up to 7 2D and THI frequencies and up to 2 color and spectral Doppler frequencies, expanding the clinical versatility of a single transducer, and thereby maximizing transducer investment.

- Wideband MultiHertz imaging allows user selection of independent 2D and color frequencies for optimal resolution and penetration
- Universal, stainless steel and disposable biopsy guides for specified linear and curved array transducers

- Innovative ultra low-loss lens materials and microelectronic technologies for efficient performance and increased signal bandwidth
- Frequency range: 2.0 – 13.0 MHz
- Hanafy Lens acoustic technology
- MicroCase™ transducer miniaturization technology and SuppleFlex cables

*Note: See dedicated transducer flyer for more information.*

## APPLICATIONS

The X300 system is designed to support most multi-specialty imaging applications. Factory supplied exam and transducer dependent imaging presets have been carefully optimized for each application to provide consistency, reliability, and increased productivity. Selected applications include body markers, text and annotation labels, worksheets and reports.

- Abdominal
- Renal
- Obstetrics
- Gynecology
- Early obstetrics
- Adult Cardiac (Transthoracic)
- Pediatric Cardiac (Transthoracic)
- Vascular (C-Vas, P-Vas, Venous)
- Small Parts (Breast, Testicle, Thyroid)
- Orthopedics
- Prostate
- Musculoskeletal
- Urology (prostate)
- Cranial
- Emergency Medicine (EM)

## EXAM-SPECIFIC MEASUREMENTS AND CALCULATIONS

The measurement function is arranged by exam type and is available for use with all exam types. The X300 system has measurement and report packages for the following exam types:

### Abdomen

- All general measurements and calculations

### Obstetrics

- All general measurements and calculations
- Early Obstetrics Menstrual Age (MA) measurements are MSD, CRL, and Yolk Sac
- Menstrual Age parameter labels are MSD, CRL, BPD, OFD, HC, AC, ATD, ASD, FL, HL, UL, TL, FT, FTA, and BN
- Five user-defined labels are available in 2D-mode
- Calculations include: EFW from the selected reference, HC/AC, TCD/AC, LVW/HW, CorBPD, FL/AC, FL/BPD, CI, AFI, AXT, and Fetal Heart

### Rate

- Calculations for both Gestational Age (GA) and ultrasound menstrual age, and Estimated Date of Confinement (EDC)
- Early Obstetric patient report and Standard Obstetric patient report include a worksheet for viewing the progress of the report during the exam process and to edit the report
- Multiple fetus reporting capabilities
- Growth Analysis Graphs with exam file linking
- OB patient report and worksheet including Fetal Heart report page

### Gynecology

- All general measurements and calculations
- Micturated and residual volume calculation
- Uterus and right and left follicle ovary measurements
- Gynecology patient report

### Cardiac

- Adult and pediatric standard measurements
- Volume formulas for Left Ventricular function assessment in 2D-mode and M-mode
- 2D-mode, M-mode, and Doppler calculations
- M-Mode Slope, Heart Rate, Time, and Distance measurements
- Doppler Acceleration, Trace, Heart Rate, Time and Velocity measurements
- Cardiac patient report and worksheet for 2D mode, M-mode, and Doppler



### **Cerebrovascular**

- All general measurements and calculations
- CCA, PreICA1, ICA1, PostICA1, PreICA2, ICA2, PostICA1, PreICA3, ICA3, PostICA3, ECA, and VA measurements
- Area Percent Stenosis and Diameter Percent Stenosis measurements
- Cerebrovascular patient report

### **Peripheral Vascular**

- All general measurements and calculations
- Right and left extremity measurements
- Peripheral vascular patient report

### **Venous**

- All general measurements and calculations
- Right and left extremity measurements
- Venous patient report

### **Thyroid**

- All general measurements and calculations
- Thyroid volume

### **Urology**

- All general measurements and calculations
- Residual volume calculations
- Prostate and urology patient report

### **Testicle**

- All general measurements and calculations

### **Orthopedic**

- All general measurements and calculations
- Right and left hip angle measurement
- Classification and Graf Sonometer
- Hip angle patient report

## **DIGITAL PATIENT STUDY STORAGE AND ARCHIVING**

The DIMAQ-IP integrated workstation allows for digital acquisition, storage and review of complete ultrasound studies, including static images and dynamic-clips, measurements, calculations and reports.



### **Patient Study Management**

Playback of digitally stored images in a selectable 1-up, 4-up, 9-up or 16-up screen format. The patient study screen allows searching, selecting and deleting studies, and exporting studies to DVD Dual Drive (DVD-R/RW & CD-R/RW)

- Internal 80 GB hard drive for patient data management
- Removable 650 MB, 700 MB and 790 MB CD-R and 650 MB or 700 MB CD-RW
- Removable 4.7 GB single layer DVD and 8.5 GB single side double layer DVD
- Hard drive capacity:
  - Approximately 95,780 b/w and color images
- Storage and retrieval of frozen static images
- Storage and retrieval of reports
- Instant dial-in and replay of static images in 1-up screen format
- Supports Measurements and Calculations on current, as well as on saved and retrieved images
- Export of patient studies from hard drive to DVD-R/RW & CD-R/RW drive. Studies can be individually selected
- Images are exported in PC compatible TIFF format or DICOM format (optional)
- M-mode Still Frame Scroll and Store
- PW Spectral Doppler Still Frame Scroll and Store

- Patient database sorting by Name, ID, Study Date and Exam type
- USB Flash Drive

## OPTIONS

### Phase Inversion Tissue Harmonic Imaging (THI) and Filtering Tissue Harmonic Imaging (Option)

Phase Inversion Tissue Harmonic Imaging with selectable frequencies increases success with difficult-to-image patients, improving diagnostic confidence. Dramatically improves contrast and spatial resolution by reducing noise and clutter in the image.

- MultiHertz multiple frequency imaging capability in Tissue Harmonic Imaging (THI)
- Available on the CH5-2, P8-4, P4-2, EC9-4, EV9-4, VF10-5, VF13-5SP and VF13-5 transducers

### Filtering Tissue Harmonic Imaging

With selectable frequencies increases success with difficult-to-image cardiac patients, improving diagnostic confidence. Dramatically improves contrast and spatial resolution by reducing noise and clutter in the image.

- MultiHertz multiple frequency imaging capability in Tissue Harmonic Imaging (THI)
- Available on the CH5-2, P4-2 and P8-4 transducers

### DICOM 3.0 Connectivity (Option)

Enables digital data transfer via a DICOM network for both printing and storage. The X300 system acts as a DICOM Storage Class User and DICOM Print Class User.

Functionality supported:

- Connectivity to PACS system for storage of all digital images and dynamic clips with patient demographic data
- In-Progress Store during the exam
- Image printing to DICOM color and grayscale printers
- DICOM Storage Commitment

- DICOM Exchange Media export to DVD-R/RW & CD-R/RW
- DICOM Region Calibration
- DICOM interchange media viewer software Showcase™
- Interchange media data base that identifies the CD to which the patient study has been burned

### DICOM Modality Worklist (Option)

Enables query and direct download of the patient worklist schedule from the Hospital/Radiology Information System (HIS/RIS) to the X300 system, automatically populating the "New Patient" screen with patient demographic information. (Requires DICOM 3.0 Connectivity option)

### DICOM MPPS—Modality Performed Procedure Step (Option)

Enables automatic exchange of 'Modality Performed Procedure Step' information with the Hospital/Radiology Information System (HIS/RIS) (Requires DICOM 3.0 Connectivity option and DICOM Modality Worklist option)

### DICOM OB Structured Reporting (Option)

DICOM Structured reporting provides a standardized report architecture to allow for easy transfer of OB measurements to offline PCs, workstations and archiving systems. DICOM OB Structured Reporting will automatically populate OB measurements to their respective fields in an external software package. (To send the OB SR data over network the DICOM 3.0 connectivity option is required)

### DICOM Cardiac Structured Reporting (Option)

DICOM Structured reporting provides a standardized report architecture to allow for easy transfer of Cardiac measurements to offline PCs, workstations and archiving systems. DICOM Cardiac Structured Reporting will automatically populate Cardiac measurements to their respective fields in an external software package. (To send the Cardiac SR data over network the DICOM 3.0 connectivity option is required)

### **Tissue Grayscale Optimization (TGO) (Option)**

TGO tissue grayscale optimization technology provides one-button image optimization. It automatically adjusts all imaging parameters to the tissue type being imaged. TGO technology improves the consistency and quality of ultrasound imaging to enhance productivity by removing time-consuming and operator dependent manual adjustments. TGO technology can be used with every transducer, for every exam type and at every imaging frequency, including THI.

### **3-Scape real-time 3D (Option)**

3-Scape real-time 3D imaging provides real-time reconstruction of 3D images during free-hand acquisition.

- Functionality for Opacity and Surf Shading modes
- Provides real-time feedback during freehand 3D volume acquisition

### **3rd Array Port(Option)**

The additional array port option adds a third array port to the X300 ultrasound system and allows the user to connect up to three linear, curved and phased array transducers simultaneously. All linear, curved and phased array transducers offered on the X300 system are compatible with the additional array port.

### **Cardiac Package (Option)**

Contains the prerequisites to perform cardiac exams (Cardiac specific M&R is standard):

- Physiological Interface
  - Standard 3-lead ECG interface
  - R-Wave single and dual trigger function
  - Heart rate display
  - Adjustable gain and trace position on screen
  - Selection for external ECG input
- Steerable Continuous Wave Doppler module
- Auxiliary Continuous Wave Doppler module

### **Stress Echo Imaging (Option)**

The stress echo package provides tools for ECG-triggered acquisition, display, selection comparison, evaluation and archiving of multiple cardiac loops during various stages of a stress echo examination. The software module is based on Microsoft Windows® 2000 standards.

- Standard acquisition protocols for treadmill, ergometric, and pharmacological stress with
  - Multiple factory defaults stress echo protocols
  - Customizable stress echo protocols
  - Prospective and retrospective capture available
  - Flexible combination of imaging modes while in stress echo package
  - Ability for customized studies through Protocol Editor, with up to 12 stages, 6 views per stage, 20 loops per view or 120 second prospective clip capture
- Full screen or ROI (region of interest) acquisition
- Complete R-R capture with clip editing
- Mode change during acquisition
- Easy workflow throughout the exam protocol
- Stage Timer
- Prospective Continuous Capture (up to 120 seconds) or Retrospective labeled capture
- LVO with contrast capture within Stress echo protocol
- Reference image display during acquisition
- Immediate review of acquired loops
- Flexibility to skip views or stages
- Flexibility to re-acquire and overwrite already acquired images
- Indication of current view, acquired views and skipped views in the workflow diagram
- Wall Motion Scoring, 17-segment model with graphical display and report printing
- LV Volume Measurements with report printing
- Factory default or user defined diagnostic text selection for stress echo and LV volume report generation

## Spectral and color Doppler Tissue Imaging (DTI) (Option)

- 2D Doppler Tissue Imaging (DTI)
- Spectral Doppler Tissue Imaging (DTI) with quantification package
- Enables assessment of LV diastolic function on the X300 system
  - Requires the P4-2 or P8-4 transducer
  - Spectral Doppler DTI capability utilizes real-time Doppler shift information from moving tissue to better visualize and quantify myocardial diastolic function. The Spectral Doppler DTI calculation package provides guided velocity and acceleration measurements and includes a measurement report package
  - Color DTI can be used for qualitative evaluation of wall motion and displays the relative change of velocities

## DOCUMENTATION DEVICES

### Optional On-Board Video Devices

- Up to two (B&W printer & color printer/DVD Recorder) documentation devices can be integrated into the system cart and controlled from the system control panel
- Supported devices:
  - Mitsubishi P93W B&W Printer
  - Mitsubishi CP900UM Color Printer (NTSC)
  - Mitsubishi CP900E Color Printer (PAL)
  - USB Inkjet Printer
  - JVC DVD BD-X201MS Recorder(NTSC/PAL switchable, 115V/230V)

## SYSTEM INPUT/OUTPUT

### Video Standard

- PAL/CCIR: 625 lines, 50 Hz
- NTSC/EIA: 525 lines, 60 Hz

### Video/Audio Input

- 1 Composite color Video in, BNC-type
- 1 Y/C Video in, S-terminal (SVHS)
- 1 2-Channel Audio in (Right/Left), RCA jack type

### Video/Audio Output

- 1 Composite B/W Video out, BNC-type
- 1 Composite color Video out, BNC-type
- 1 RGB & Composite Sync out, mini D-SUB (15 pin)
- 1 Y/C Video out, S-terminal (SVHS)
- 1 2-Channel Audio (Right/Left), RCA jack type
- 1 VGA out, mini D-SUB (15pin)

### Other Input/Output

- 1 Foot switch connector, phone jack-type
- 1 Remote control connector, mini jack (stereo)

### System Interface Connections

- Network
  - 1 Ethernet connector, type RJ45 (10/100 BaseT)
- Peripherals
  - 1 Serial port RS232-C connector, D-SUB (9-pin)
  - 2 USB ports, Series A-type
  - 2 AC Main Outlet

## SYSTEM DIMENSIONS

- Height: 138.2 cm (54.4 inch)
- Width: 51.8 cm ( 20.4 inch)
- Depth: 88.0 cm (34.6 inch)
- Weight: 102 kg (225 pounds) without OEM's

## ELECTRICAL/ENVIRONMENTAL SPECIFICATIONS

The X300 ultrasound system is available in one mainframe configuration, suitable for use in 100/115V and 230V environments.

- Power connections:
  - 100-120/200-240 VAC, 50/60Hz
- Built-in AC isolation transformer
- Power consumption: maximum 600VA with OEM's
- Atmospheric pressure range: 700 hPa to 1060 hPa (525 to 795 mm Hg) or up to 3050 m (10,000 ft)
- Ambient temperature range (without OEM's): +10°C to +40°C (50° to 104°F)

- Humidity: 30 – 80%, non-condensing, during operation
- Maximum heat output: 2150 BTU/hr

## STANDARDS COMPLIANCE

The X300 system meets the requirements of the Medical Device Directive and carries the CE Mark.

### Quality Standards

ISO 9001:2000

ISO 13485:2003

EN46001:1996

### Design Standards

UL 60601-1

CSA C22.2 No. 601-1

EN 60601-1 and IEC 60601-1

EN 60601-1-1 and IEC 60601-1-1

EN 60601-1-2 and IEC 60601-1-2

EN 60601-2-37 and IEC60601-2-37

### Acoustic Output Standards

- IEC 61157 (Declaration of Acoustic Power)
- AIUM/NEMA UD-2, 1998 Acoustic Output Measurement Standard for Diagnostic Ultrasound
- AIUM/NEMA UD-3, 1998 Standard for Real-Time Display of Thermal and Mechanical Acoustic Output Indices on Diagnostic Ultrasound Equipment

### CE Declaration

The 230V/115 V version of the X300 system is provided with a CE marking in accordance with the regulations stated in Council Directive 93/42/EEC of June 14, 1993 concerning Medical Devices. Siemens Medical Solutions USA, Inc., is certified by notified body 0123 to Annex 11.3 - Full Quality System.



### Authorized EC Representative:

Siemens Aktiengesellschaft  
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