

Data



## SONOLINE Antares Ultrasound System

**SIEMENS**  
medical

# SONOLINE Antares Ultrasound System

---

*The SONOLINE Antares™ ultrasound system embodies a new dimension in premium performance ultrasound delivering outstanding image quality, connectivity and scalability in a unique ergonomic design.*

## GENERAL INFORMATION

- Innovation in the areas of digital electronics and acoustics provides a new level of ultrasound *Diagnostic Precision* that translates directly into higher diagnostic confidence.
- The *DIMAQ-IP Integrated Workstation* combines the DIMAQ™ integrated ultrasound workstation with the power of the Crescendo™ multi-dimensional image processor, creating an advanced ultrasound workstation.
- An evolution in *Workflow Control* is defined with the unique, user-centric architecture of the Antares system and *syngo*™ system, the revolutionary software for medical imaging.
- *ErgoDynamic Design* offers optimum access and operator comfort.

### ErgoDynamic Design – Form Follows Function

- User-centric HomeBase design
- System control panel and monitor height adjustment for standing and sitting positions
- Re-positional wrist support to help reduce operator repetitive stress disorders
- Retractable keyboard for standard, customizable auto-text, auto-complete text and annotations, body markers and special functions
- System control panel illumination via task lighting and backlit controls
- Portability: four-caster design with central braking system
- Three-pedal footswitch option for Freeze, Print/Store and Save Volume
- On-board storage area

### Language Support

- Image screen, control panel text and operating instructions all available in English, French, German, Spanish and Italian.
  - Instructions for Use available in Russian, Greek, Japanese, Danish, Norwegian, Swedish, Finnish, Portuguese, Dutch, Chinese

### Monitor

- 15-inch, high resolution, progressive scan, 75 Hz display (PAL), 60 Hz display (NTSC)
- The image display area is 640 x 480 pixels with a recordable area of 800 x 600 pixels
- Adjustable monitor/control panel height
- Monitor tilt of 10 degrees up, 8.5 degrees down and swivel of 180 degrees
- Digital on-screen display brightness and contrast controls with factory default presets
  - Options for 'standard' and 'ambient light' scanning environments

- Energy Savings Compliant per VESA Display Power Management Signaling standard

### Hard Drive

- 40 GB Hard Drive
- Image storage capacity up to 12,000 images; color or black/white
- Automatic disk management (first in – first out) with capability to auto delete based on Archived, Archived & Committed, Archived & Verified, Sent, Sent & Committed, Printed

### Read/write CD-R

- 650 Mbytes; read/write CD-R
- Allows storage of images and presets
- Storage capacity dependent upon writing session format, e.g., Entire CD written in one session: estimated storage of 400 images
- Supports system software and option upgrades
- DICOM interchange media format

### Audio Speakers/Microphone

- High performance audio speakers integrated with the monitor
- Directional microphone for voice recording on videotape

### Transducer Ports

- Three universal transducer ports that support standard, Multi-D™ array transducers and Hanafy Lens technology transducers
  - Also supports advanced transducer technologies including *fourSight*™ 4D transducer technology\*
- Single dedicated CW transducer port\*
- 360-pin connection
- Electronic transducer selection
- Unique industrial design provides easy access to all transducer ports

*\*CW and 4D imaging transducer technology are not yet commercially available*

### Transducer Storage

- Six configurable transducer holders support all transducer designs and provide gel bottle storage
- Cable-up connectivity of transducers supports ergonomic and secure cable management during exams and transport
- Unique transducer holder for endocavity transducer for easy access and storage

### Scan Formats

- Sector: selectable field of view from 15 to 90 degrees
- Virtual Format: image formation supports image displays in linear, sector, steered or trapezoidal format
- Trapezoidal: selectable field of view up to 60 degrees on linear transducers
- Steerable Linear: variable steering angles for 2D-mode, Color and Doppler
- Curved: selectable field of view from 15 to 170 degrees depending on transducer
- Read/write zoom with image pan
  - Available on live, frozen, cine, dual screen and reviewed images
  - Preserves full image resolution within the zoom ROI
  - Up to 10 X zoom

# SONOLINE Antares Ultrasound System

## Acoustic Output Management

- On-screen acoustic power indicator (AIUM/NEMA output display standard)
  - Display of power output: %, MI, TIC, TIS/TIB, TIF

## IMAGING MODES AND OPTIONS

- 2D
  - MultiHertz™ multiple frequency imaging
  - Tissue Harmonic Imaging
- Color Doppler
- Power Doppler
- PW Doppler
  - Duplex Doppler
  - Triplex Doppler
- M-Mode
- SieScape™ panoramic imaging
- Color SieScape™ panoramic imaging
- TEQ™ ultrasound technology
- SieClear™ multi-view spatial compounding
- 3-Scape™ real-time 3D imaging
- Cadence™ contrast agent imaging technology\*

\*At the time of publication, the U.S. Food and Drug Administration has cleared ultrasound contrast agents only for use in LVO. Check current regulations for the country in which you are using this system for contrast agent clearance.

## Beamforming in 2D Imaging

Next-generation computational power and technology enables patented Precision Up-Sampling at four-times the speed of conventional beamformers, creating ultra-fine digitization of the RF signal data in the time and amplitude domains

- Maximum Information Signal Acquisition (MISA) Beamformation Technology combined with the speed and power of GigaProcessing Technology result in superb contrast and spatial resolution, higher frame rates, and improved signal-to-noise ratio
- Channel-per-Signal Architecture supports dedicated processing channels for each transducer element
- Industry first to utilize High-Density Active Aperture; delivering more simultaneous aperture than conventional systems for greater clinical utility and increased versatility
- Redefined ASIC technology preserves signal integrity with greater flexibility and reliability
- Configurable signal processing hardware provides a pathway for future performance expansion and technology innovations
- Up to 2304 processing channels
- 2D-mode line density up to 512 lines
- Total system dynamic range of > 160 dB

## Focusing

- Up to eight transmit focal zones
- Continuous dynamic receive focusing

## 2D Image Processing

- Up to five user-selectable transmit frequencies
- Persistence: 5 levels (0-4)
- Edge enhancement: 4 levels (0-3)
- Resolution/frame rate: 6 levels (0-5)

- Display dynamic range: 30 to 70 dB in five-decibel increments; 30 – 90 dB in five-decibel increments (with ambient light monitor preset)
- Gain: -20 to 60 dB in one-decibel increments
- Depth Gain Compensation: eight DGC controls
- Up to nine user-selectable 2D maps (A-I)
- Up to twelve user-selectable 2D tint maps (0-11)

## 2D Image Display

- Full screen, dual and seamless dual screen formats
- Invert (U/D) and transposed (L/R) for all formats
- Image Depth up to 28 cm in 0.5-1.0 cm increments (may vary with transducer)
- Sector: selectable field of view from 15 to 90 degrees
- Trapezoidal: selectable field of view up to 60 degrees on linear transducers
- Steerable Linear: variable steering angles of 2D-mode, Color and Doppler
- Curved: selectable field of view from 15 to 170 degrees, in one-degree increments, depending on transducer
- Read/write zoom with image pan
  - Available on live, frozen, cine, dual screen and reviewed images
  - Preserves full image resolution within the zoom ROI
  - Up to 10 X zoom
- On-screen timer (00:00:00)

## 2D Calipers – Generic Measurements and Calculations

- Multiple cursor sets on frozen, live, dual screen and cine images
- Distance, depth from skin line
- Area and circumference: ellipse and trace
- Compound Measurements:
  - Volume: user-selectable preset by 3 distances; 1 distance and 1 ellipse, or 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

## MultiHertz Multiple Frequency Imaging

**Siemens unique MultiHertz multiple frequency imaging capability provides the resolution and penetration of several transducers in one. At the push of a button, the user can change frequencies for 2-D and color Doppler independently for optimal choice of image resolution and penetration of color sensitivity.**

- Number of frequencies is transducer dependent
- 5 frequencies in 2D and M-mode
- Up to 5 frequencies in Tissue Harmonic Imaging
- Up to 4 frequencies in color Doppler modes
- Independent frequency selection in 2D and color Doppler modes
- Up to 4 frequencies in Pulsed Wave (PW) modes
  - High Pulse Repetition Frequency (HPRF)

## Tissue Harmonic Imaging

**Tissue Harmonic Imaging delivers a higher level of diagnostic information for the difficult-to-image patient.**

# SONOLINE Antares Ultrasound System

---

## ***Dramatically improves contrast and spatial resolution by reducing noise and clutter in the image.***

- Utilizes wideband harmonics
- MultiHertz imaging
- Patented Phase Inversion Technology provides the most comprehensive Harmonic Imaging possible
- Available for the VFX13-5, VF13-5, VF10-5, VFX 9-4, VF7-3, CH6-2, CX5-2, C5-2, P10-4, PH4-1 and EC9-4 transducers
  - Compatible with advanced imaging options including SieClear compounding, SieScape imaging, 3-Scape imaging, TEQ technology and Cadence contrast imaging technology
  - All 2D optimization parameters also available in THI

## **Color Doppler**

- Available on all imaging transducers
- Advanced adaptive processing in Color mode resulting in excellent spatial resolution and superior flash suppression
- Up to 4 user-selectable transmit frequencies
- Up to 6 user-selectable color velocity maps (3 velocity; 3 velocity/variance)
- PRF range: 100 to 19,500 Hz
- Up to 512 color samples per color flow data line
- Gain: -20 to 20 dB in one-decibel increments
- Four wall filter selections (0-3)
- Velocity range: 0.004 cm/sec to 450 cm/sec
- Up to 512 2D-mode lines plus 256 color flow lines
- Up to 5 levels tissue/color priority (0-4)
- Up to 4 levels of color smoothing (0-3)
- Flow states: Low, General, High for all applications
- Color persistence levels: Up to 5 levels (0-4)
- Resolution/frame rate: 6 levels (0-5)
- Color invert
- Color display on/off

## **Power Doppler Imaging**

- Available on all imaging transducers
- Up to 4 user-selectable transmit frequencies
- PRF range: 100 to 19,500 Hz
- Gain: -20 to 20 dB in one-decibel increments
- Four wall filter selections (0-3)
- Background power Doppler on and off
- Up to 5 tissue/power Doppler priority (0-4)
- Up to 4 levels of power smoothing (0-3)
- Up to 8 color power maps (A-H)
- Flow states: Low, General and High for all applications
- Power persistence levels: Up to 5 levels (0-4)

## **Color and Power Doppler Display**

- 2D/C mode, dual 2D/C mode
- 2D/C/D mode (simultaneous triplex), 2D/C/D mode (update)

## **Pulsed Wave Doppler**

- Available on all transducers
- Up to four user-selectable transmit frequencies
- FFT processing: 32 to 256 points
- FFT speed up to 1,920 FFT's per second at the highest sweep speed
- Five sweep speed levels (25,50,100,150,200)
- Up to eight factory defined 2D maps (A-H)
- Up to twelve factory defined Doppler tint maps
- Display dynamic range: 30 to 60 dB in five-decibel increments
- Gain: 0 to 90 dB in one-decibel increments
- PRF range: 100 to 52,000 Hz

- Angle correction 0 – 89° in one-degree increments; Auto angle correction 60/0/60°
- Gate size: from 0.1 up to 4.0 cm, depending on transducer
- Up to eight filter selections
- Velocity range: 0.12 cm/sec to 2000 cm/sec (with High PRF) at angle correction
- T/F Res: Time/Frequency Resolution feature
- Sixteen levels of baseline shift
- Spectral invert
- Derived waveform Doppler Trace function analyzes frozen Doppler spectra for mean and maximum velocity information. Waveform may be set to trace above baseline, below baseline or both.
- Auto-Doppler trace and calculations performed in real-time provide auto-calculation and display of PS, ED, TAMx, TAMn, PI, RI and S/D

## **Pulsed Wave Doppler Display**

- Full screen trace or 2D, 2D/D mode, simultaneous 2D/C/Doppler and update
- Four imaging formats: 1/3-2/3, 2/3-1/3, 1/2-1/2, side by side

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

- Multiple cursor sets
- Velocity/frequency; heart rate; trace; resistive index (RI); systolic/diastolic ratio (S/D); slope (acceleration/deceleration); time averaged max velocity (TAMx); time averaged mean velocity (TAMn); heart cycle tool; flow volume using 1 velocity and 1 distance, or 1 velocity and 1 ellipse, velocity ratio tool, time
- Automatic waveform trace to simplify Doppler measurements
- Auto-Doppler Statistics for real-time display of Doppler spectra measurements and calculations including PS, ED, TAMx, TAMn, PI, RI and S/D

## **M-Mode**

Available on all imaging transducers

- Up to 5 user-selectable transmit frequencies
- Up to four edge enhancement selections (0-3)
- Display dynamic range: 30 to 70 dB in five-decibel increments
- Gain: -20 to 60 dB in one-decibel increments
- Up to 6 user-selectable M-mode maps (A-F)
- Up to 12 user-selectable M-mode tint maps (0-11)
- Five sweep speed selections: 25,50,100,150,200
- M-mode zoom feature

## **M-Mode Image Display**

- Full screen, 2D/M mode
- Cursor sizes; size adjustments are continuous
- Four imaging formats (2D/trace): 1/3-2/3, 2/3-1/3, 1/2-1/2, side by side

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

- Multiple cursor sets
- Distance tool
- Heart rate tool
- Slope tool
- Time tool

# SONOLINE Antares Ultrasound System

## SIESCAPE™ PANORAMIC IMAGING

**Large field-of-view images are acquired with real time high resolution gray scale imaging. These images present ultrasound information in anatomical context providing gross anatomical orientation for referring physicians, teaching and surgical consultation.**

- Available on all imaging transducers
- Displays up to 60 cm in length or 180 degrees
- Pause and reverse during acquisition
- On-screen reference and speed indicators simplify scanning technique
- Zoom and pan capabilities
- Unique Cine display provides review capability of the individual data frames composing the SieScape image

## COLOR SIESCAPE™ PANORAMIC IMAGING

**Color SieScape imaging is a combination of real-time SieScape imaging and real-time Power mode acquisition. All Power information is preserved during image acquisition and the peak of the signal is saved for the Color SieScape image. Available on all imaging transducers.**

- Displays up to 60 cm in length or 180 degrees
- On-screen reference and speed indicators enhance technique
- Pause and reverse during acquisition
- Optimization features including All Power, Color Capture, Flow and Acquisition Fraction
- Zoom and pan capabilities
- Unique Cine display provides review capability of the individual data frames composing the Color SieScape image

## TEQ™ ULTRASOUND TECHNOLOGY

**TEQ technology is a sophisticated signal-processing technology that automatically equalizes tissue gain and brightness in two dimensions providing consistent, reproducible image quality in 2D, THI and M-mode at the push of a button.**

- Affords increased productivity and reduced inter-operator variability
- Pre-processing technology applied to RF echo data before image is formed
- Available on all transducers
- Auto Refresh on select events (THI On/Off)
- User selectable Auto-Update upon Freeze and Unfreeze events
- Compatible with other advanced imaging options including THI, SieScape imaging, 3-Scape™ real-time 3D imaging, SieClear compounding, and Cadence contrast agent imaging technology

## SIECLEAR™ MULTI-VIEW SPATIAL COMPOUNDING

**SieClear compounding utilizes multiple lines of sight to provide improvements in contrast resolution and speckle reduction.**

- Improves contrast resolution and border detection

- Available on VFX13-5, VF13-5, VFX9-4, VF10-5, VF7-3, CH6-2, C5-2, CX5-2 and EC9-4 transducers
- Accessible in Tissue Harmonic Imaging and Color/Doppler modes
- Compatible with other advanced imaging options including THI, SieScape imaging, 3-Scape imaging and TEQ technology

## 3-SCAPE REAL-TIME 3D IMAGING

**3-Scape imaging provides real time capture and display of volume data using standard, Multi-D array and Hanafy Lens transducers.**

- Real-time reconstruction during free-hand acquisition
- Simultaneous acquisition of 2D and Power mode volumes can be independently reviewed in surface rendering
- Multiplanar rendering demonstrates imaging planes not accessible with normal scanning techniques
- Scalpel, gradient opacity, rotation and zoom tools available
- Available on VFX13-5, VF13-5, VFX9-4, CH6-2, C5-2, CX5-2, and EC9-4 transducers
- Compatible with other advanced imaging options including THI, SieClear compounding and TEQ technology

## CADENCE™ CONTRAST AGENT IMAGING TECHNOLOGY\*

**Cadence contrast imaging technology offers advances in imaging performance and workflow protocols designed for mainstream contrast agent imaging procedures.**

- Ensemble contrast imaging provides low MI continuous real-time detection technique with excellent contrast-to-tissue specificity
- Agent Emission Imaging using high MI techniques
- On-screen stopwatch feature
- Available on the PH4-1 and C5-2 transducers
- Frame rate control for intermittent imaging
- Burst control for destruction/reperfusion studies

*\*At the time of publication, the U.S. Food and Drug Administration has cleared ultrasound contrast agents only for use in LVO. Check the current regulation for the country in which you are using this system for contrast agent clearance*

## FREEZE, CINE AND POST-PROCESSING FUNCTIONS

### Cine Review

**Cine feature offers post-acquisition optimization of all real-time post-processing functions.**

- Frame-by-frame cine loop review and continuous playback cine, including control of playback rate
- In mixed mode (2D/M, 2D/D, 2D/C/D), individual modes can be played back independently
- Standard cine Memory\*: 30 seconds, 201 megabytes, estimated storage of at least 400 images (2D & 2D/C)
- Up to 30 seconds Doppler cine, or up to 25 seconds M-mode cine
- Available in full screen & dual screen display

*\* Values dependent on frame rate, line density, etc.*

# SONOLINE Antares Ultrasound System

## Post Processing Features in Freeze Frame or Cine

- **2D-mode**
  - Zoom/pan
  - Dynamic range
  - Gray map
  - 2D-mode tint map
  - Measurements/annotations/pictograms
- **Color Doppler**
  - Zoom/pan
  - Color map
  - Color invert
  - Color baseline shift
  - Color display on/off
  - Color priority
  - Measurements/annotations/pictograms
- **Spectral Doppler**
  - Baseline shift
  - Spectral dynamic range
  - Gray map
  - Doppler tint map
  - Angle correct
  - Spectral invert
  - Measurements/annotations/pictograms
  - Sweep speed
- **M-mode**
  - Dynamic range
  - Gray map
  - M mode tint map
  - Measurements/annotations/pictograms
  - Sweep speed
- **Report Printing**
  - Measurement reports and OB graphs to laser printer
- **Basic Physio Option**
  - ECG option for on-screen ECG trace in B, M and Doppler imaging modes
  - The basic ECG option delivers ECG trace only on-screen display and is synchronous with the 2D image

## SYSTEM SOFTWARE

*The core software architecture of the Antares system is based upon syngo system, the revolutionary software for medical imaging. syngo adds a universal imaging platform to the underlying Windows operating system, offering basic functionality such as DICOM, and standard software tools with access to the system and to PACS for an integrated hospital environment. syngo system software also provides the foundation for an intuitive, icon-based user interface.*

The syngo screen is easy to use and follow, anticipating and executing user instructions. On-screen graphics are organized for speed and efficiency. These include:

- Tool Tips to provide a functional description of the task at hand
- The Task Card System to organize workflow
- eManual, which fully integrates an abridged operator's manual into the system

## CORE ACOUSTIC PERFORMANCE

*The power of the Antares platform begins at the front-end with wideband MultiHertz imaging, and unique, Multi-D Array and Hanafy Lens transducer technologies. Using the latest design, fabrication techniques and materials, Siemens produces extremely wide band, highly sensitive, multi-frequency transducers.*

*The transducers may provide up to five 2D and THI imaging and four color and pulsed Doppler frequencies, expanding the clinical capability of a single transducer, and thereby maximizing transducer performance.*

- Wideband MultiHertz imaging allows user selection of 2D and color frequency for optimal resolution and penetration
- Next generation Multi-D Array transducer technology for precise beam elevation control and exceptional spatial resolution throughout the field of view
- Hanafy lens transducer technology provides excellent elevation focusing and uniform beam intensity throughout the field of view.
- MicroCase™ transducer miniaturization technology combined with SuppleFlex™ transducer cables provide lightweight, comfortable transducer designs that can reduce operator fatigue during prolonged scanning sessions
- Advanced hybrid and disposable biopsy guides for specified linear and curved array transducers
- Innovative composite materials and microelectronic technologies for efficient performance and increased signal bandwidth
- Frequency range: 2.0 - 13.0 MHz

## APPLICATIONS

*The Antares system is designed to support all General Imaging applications. Factory exam and transducer dependent imaging presets have been clinically optimized for each application to provide consistency, reliability, and increased productivity. Up to 10 user-programmable presets are available for each application/transducer combination to customize the system for specific clinical needs. Selected applications include body markers, programmable text and auto-annotation labels, worksheets and reports.*

- Abdominal
- Renal
- Obstetrics
- Fetal Echo
- Gynecology
- Neonatal
- Pediatric
- Cerebrovascular
- Peripheral Vascular (arterial and venous)
- Small Parts (breast, testicle, thyroid)
- Musculoskeletal & Superficial Musculoskeletal (digital)

# SONOLINE Antares Ultrasound System

---

- Transcranial\*
- Urology (penile, pelvis, prostate)

\* Not yet commercially available

## Abdominal

### 2D-mode Labeled Measurements

- Liver, CHD, CBD, GB Wall, Pancreatic Duct, Spleen, Kidney, Pre-Void Bladder, Post-Void Bladder

### Doppler Labeled Measurements

- Aorta, Celiac A, Splenic A, Gastric A, Hepatic A, SMA, Renal A, IMA, Bifurcation, Iliac A, Anastomosis

### Pictograms and Annotations

#### Worksheet and Report

## Renal

### 2D-mode Labeled Measurements

- Kidney, Ureter, Pre-void Bladder, Post-void Bladder

### Doppler Labeled Measurements

- Aorta, Inferior Vena Cava, Renal Artery, Renal Vein, Segmental Artery, Interlobar Artery, Arcuate Artery, Anastomosis Artery, Anastomosis Vein

### Pictograms and Annotations

#### Worksheet and Report

## Obstetrics

- Menstrual Age and Estimated Date of Confinement (EDC) by LMP or IVF
- Menstrual Age by Single Parameter: Biparietal Diameter (BPD), Head Circumference (HC), Abdominal Circumference (AC), Femur Length (FL), Crown Rump Length (CRL), Binocular Distance, Gestational Sac Diameter (GSD), Humerus Length, Tibia Length, Ulna Length, Clavicle, Foot
- Menstrual Age by Multiple Parameters
- Estimated Date of Confinement by Ultrasound Age
- Estimated Fetal Weight (EFW)
- Quadruplets
- User defined OB tables

### Growth Evaluation

- Ratios: Cephalic Index (CI), HC/AC, FL/AC, FL/HC, FL/BPD, LVW/HW, TCD/AC
- Curves: AC, APADx TAD, BPD, CRL, EFW, FL, FTA, GSD, HC/AC, HC, Humerus, OFD, TAD
- Percentile display on report

### 2D-mode Measurements

- Amniotic Fluid Index, Anterior-posterior Abdominal Diameter (APAD), Lateral Ventricular Width (LVW), Occipital-frontal Diameter (OFD), Abdominal Diameter (TAD), Thoracic Circumference (TC), Transcerebellar Diameter (TCD), Hemispheric Width (HW), Radius, Yolk Sac, Cisterna Magna, Nuchal Thickness, Cervix Length, Maternal Kidney, Fetal Aorta, Middle Cerebral Artery (MCA), Umbilical Artery, Ovarian Artery, Uterine Artery, Fetal Kidney, FTA

### Doppler Measurements

- Fetal Heart Rate; Fetal Aorta; Middle Cerebral Artery; Umbilical Artery; Ovarian Artery; Uterine Artery

### M-mode Measurements

- Fetal Heart Rate

### Biophysical Profile

#### Pictograms and Annotations

#### Worksheet and Report

## Fetal Echo

### 2D-mode Measurements

- Left Heart: LA Width, LA Length, LVPW, LV Length, LVID, LVOT, IVSd
- Right Heart: RA Width, RA Length, RVAW, RV Length, RVID, RVOT
- CTA Ratio: HA, TA
- Arteries: Aortic Arch, AoD, Ascend Ao, Descend Ao, Trans Ao, Ductal Arch, Isthmus, PA

### Doppler Measurements

- Valves: MV Epeak, MV Apeak, AV, PV, FO
- Ventricles: LVICT, LVET, LVIRT, RVET, Fetal Heart Rate
- Arteries: Ascend Ao, Descend Ao, Trans Ao, DA, MPA, Umb A
- Veins: SVC, IVC, L Pulm V, R Pulm V, Umb V

### M-mode Measurements

- LA, MV, LVPW, LVID, IVSd, AV, AoD, LVET, Fetal Heart Rate

### Annotations and Pictograms

#### Worksheet and Report

## Gynecology

### 2D-mode Measurements

- Kidney, Uterus, Ovary, Endometrium, Pre-void Bladder, Post-void Bladder, Cyst 1-6, Follicle 1-6

### Doppler Measurements

- Arcuate Artery, Ovarian Artery, Uterine Artery

### Annotations and Pictograms

#### Worksheet and Report

## Neonatal

- Worksheet and Report

## Pediatric

### 2D-mode Measurements

- Pediatric hip
- Pediatric Sonometer

### Worksheet and Report

## Cerebrovascular

### 2D-mode and Doppler Measurements

- Common Carotid Artery, External Carotid Artery, Internal Carotid Artery, Vertebral Artery, Subclavian Artery, Innominate Artery, Aorta

# SONOLINE Antares Ultrasound System

---

## Annotations and Pictograms

### Worksheet and Report

- Ratio: R&L ICA/CCA and R-CCA/L-CCA

## Peripheral Vascular

### 2D-mode and Doppler Measurements

- Lower Extremities: Abdominal Aorta, Common Iliac Artery, Internal Iliac Artery, External Iliac Artery, Common Femoral Artery, Superficial Femoral Artery, Profunda Femoral Artery, Popliteal Artery, Tibial-Peroneal Artery, Posterior Tibial Artery, Anterior Tibial Artery, Peroneal Artery, Dorsalis Pedis Artery
- Upper Extremities: Innominate Artery, Common Carotid Artery, Vertebral Artery, Subclavian, Axillary Artery, Deep Brachial Artery, Brachial Artery, Radial Artery, Ulnar Artery

### Annotations and Pictograms

### Worksheet and Report (arterial only)

## Transcranial\*

### 2D-mode and Doppler Measurements

- Middle Cerebral Artery, Internal Carotid-Siphon, Anterior Cerebral Artery (A1&A2), Anterior Communicating Artery, Posterior Cerebral Artery (P1&P2), Posterior Communicating Artery, Basilar Artery, Vertebral Artery
- Ratio: MCA/ICA

### Worksheet and Report

\* Not yet commercially available

## Musculoskeletal/Superficial Musculoskeletal

### Annotations and Pictograms

### Worksheet and Report

## Breast

### 2D

- Masses

### Annotations and Pictograms

### Worksheet and Report

## Testis

### 2D-mode Measurements

- Testicle, Epididymus, Scrotal Wall, Mass 1,2,3

### Doppler Measurements

- Testicular Artery, Epididymal Artery, Intratesticular Artery, Epididymal Artery, Epididymal Vein, Intratesticular Vein

### Annotations and Pictograms

### Worksheet and Report

## Thyroid

### 2D-mode Measurements

- Thyroid Lobe, Isthmus, Parathyroid, Mass

### Annotations and Pictograms

### Worksheet and Report

## Pelvis

### 2D-mode Measurements

- Prostate, Pre-Void Bladder, Post-Void, Bladder, Seminal Vesicle, Urethra, Ureter, Kidney

### Annotations and Pictograms

### Worksheet and Report

## Penile

### 2D-mode Measurements

- Corp Cavernosum, Corp Spong, Cav Art, Pre-Injection Cav Art, Post-Injection Cav, Urethra

### Doppler Measurements

- Iliac A, Dorsal A, Urethral, Bulbar, Brach, Cavernosal, Pre-Injection Cav, Post-Injection Cav, Sup Dorsal V, Deep Penile V

### Worksheet and Report

## Prostate

### 2D-mode Measurements

- Prostate, Rectal Wall, Seminal Vesicle, Urethra, Mass 1,2,3, Kidney
- Prostate Specific Gravity: User Preset Using 1.0 or 1.05

## DIGITAL STORAGE AND IMAGE ARCHIVING

*The DIMAQ-IP provides access to ultrasound images and data with the power to support image capture and compression, clips\*, measurements and calculations, and patient file storage in DICOM format for CD-R archiving and transfer via network connections.*

*Users can save and recall color and black/white images on the system's internal hard drive and read/write CD-R disks. Each image stored to the CD-R disk or the network (DICOM users) is duplicated on the hard drive for data safety.*

\* Dynamic clip feature is not yet commercially available

## Exam Review

*Display of digitally stored images in user selectable screen formats (e.g., 1:1, 2:1, 4:1, 9:1, etc.). Exam review allows the selection of images for printing and deletion, review of the current exam in progress and archived exams on either the hard drive or CD-R. Exam sorting/search can be done by Name, ID, Exam Type and Date/Time.*

## DICOM Connectivity

### DICOM Storage Class

- Allows connectivity to PACS
- Allows 'in-progress' or 'batch' storage of digital black/white and color images with patient demographic data

### DICOM Print Class

- Allows 'in-progress' or 'batch' printing to DICOM print devices

# SONOLINE Antares Ultrasound System

## ELECTRICAL/ENVIRONMENTAL SPECIFICATIONS

### DICOM Worklist

- Allows the user to download patient demographic data from a Hospital or Radiology Information System's DICOM Worklist server

### DICOM Modality Performed Procedure Step

- Provides performed procedure information from the Antares system to a HIS/RIS system
- Provides procedure status: In-progress, Complete, or Discontinued

### DICOM Storage Commitment

- Provides commitment from a storage device that images and related information have been stored reliably

*Siemens Ultrasound Divisions's SONOLINE Antares DICOM Conformance Statement is available on the Siemens Ultrasound World Wide Web site at:*

*<http://www.siemensmedical.com> and select [Services/DICOM]*

### Documentation Devices

- Up to three documentation devices are supported. Up to two on-board document devices can include color printer, b/w thermal printer, and SVHS VCR.
- Supported devices:
  - Sony SV09500 MD/P VCR
  - Mitsubishi P91D B/W Printer
  - Mitsubishi CP-770 DW 4x3 Color Printer
  - Mitsubishi CP-800 DW 5x7 Color Printer
- Supported interfaces for reports printers: HP4050, HP4000, HP4200

### System connections supported

- Network
  - 10-base T Ethernet (RJ-45 Connector)
  - 100-base T Ethernet
- Peripherals
  - RS232, serial and parallel ports
  - USB

## SYSTEM DIMENSIONS

- System Height: 130.8 cm (51.5 inches)
- Width: 61 cm (24 inches)
- Depth: 91.5 cm (36 inches)
- Weight: 159 kg (350 pounds); 184 kg (406 pounds) fully configured
- User-select control panel/monitor height adjustment
  - Control panel lowest position: 77.5 cm (30.5 inches) from handle
  - Control panel highest position: 93 cm (36.5 inches)
  - Monitor lowest position: 132 cm (52 inches) measured to top of monitor
  - Monitor highest position: 147 cm (58 inches) measured from top of monitor

- Voltage: 100V, 115V, 230V (50/60 Hz)
- Integrated A/C line conditioner
- Built-in AC isolation transformer
- Power connections:
  - 100V version: 90-110 VAC;
  - 115V version: 98-132 VAC;
  - 230V version: 196-264 VAC
- Power consumption: maximum 1.2 kVA (may vary with configuration)
- 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: 10-80%, non-condensing
- Maximum heat output: 2400 BTU/hr
- Vibration and shock: specified in EN IEC 60601-1 and IEC 68-2
- Input/Output: Modem, J1 (USB-A); Ethernet RJ45 (10BaseT/100BaseT); Composite Video (BNC-type, 1 input, 1 output); Y/C Video (S-terminal), (1 input, 1 output); 2 Channel Audio (Right/Left), RCA-type (1 input, 1 output)
- Output: RBG/S (VISTA 15-pin high density D-sub miniature); RS-232 Port for Printer / PC Communication (COM1), (9-pin D-sub miniature); Remote Printer Connector, J5B, J5A, (USB-A); Parallel Port (Printer), (25-pin D-sub miniature); Composite Video (BNC-type)
- Input: ECG Trigger (BNC-out)
- Video Standard
  - NTSC/EIA: 525 lines, 60 Hz
  - PAL/CCIR: 625 lines, 50 Hz
- Stereo headphone jack

# SONOLINE Antares Ultrasound System

## STANDARDS COMPLIANCE

*The Antares platform meets the requirements of the Medical Device Directive and carries the CE Mark.*

### Quality Standards

FDA QSR 21 CFR Part 820

ISO 9001:94

ISO 13485

EN 46001:96

### Design Standards

UL 2601-1

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 IEC 60601-2-37

### Acoustic Output Standards

IEC 61157 (Declaration of Acoustic Power)

AIUM/NEMA UD-2, 1998 Acoustic Output Measurement Standard for Diagnostic Ultrasound

AIUM/NEMA, 1998 Standard for Real-Time Display of Thermal and Mechanical Acoustic Output Indices on Diagnostic Ultrasound Equipment

### CE Declaration

This product 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 Systems, Inc., is certified by notified body 0123 to Annex 11.3 - Full Quality System.



### Authorized EC Representative:

Siemens Aktiengesellschaft  
Bereich Medizinische Technik  
Henkestrasse 127  
D-91052 Erlangen

SONOLINE, SieScape, Color SieScape, MultiHertz, and syngo are registered trademarks and Antares, DIMAQ, Crescendo, Multi-D, fourSight, TEQ, SieClear, 3-Scape, Cadence, microCase and SuppleFlex are trademarks of Siemens AG.

Windows® is a registered trademark of the Microsoft Corporation.

Siemens reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens Medical Systems Sales Representative for the most current information.

**Siemens Medical**  
**Solutions that help**

Siemens AG Medical Solutions  
Henkestraße 127  
D-91052 Erlangen  
Germany  
Telephone: +49 9131 84-0

[www.SiemensMedical.com](http://www.SiemensMedical.com)

Siemens Medical Solutions USA, Inc.  
Ultrasound Division Headquarters  
P.O. Box 7393  
Mountain View, CA 94039-7393 USA  
Tel: 1 800-498-7948  
From outside the USA: +1 650-969-9112

Europe: +44 20 8479 7950  
Asia Pacific: +65 6341 0990  
Latin America: +1 305-596-3148

Siemens Medical Solutions USA, Inc.  
Ultrasound Division  
P.O. Box 7002  
Issaquah, WA 98029-7298 USA  
Tel: 1 800-367-3569  
From outside the USA: +1 425-557-8704

© 2003 Siemens Medical  
Solutions USA, Inc.

A91004-M2450-F473-3-4A00  
DB 0503