ACUSON Antares Ultrasound System

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SIEMENS

ACUSON ANTARES ULTRASOUND SYSTEM

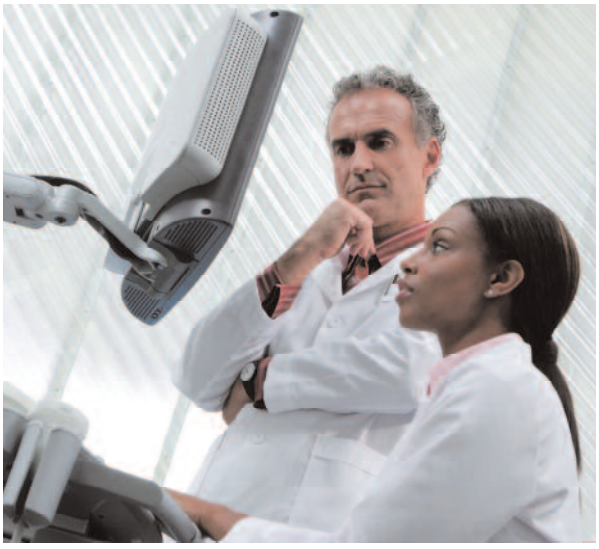
The ACUSON Antares™ ultrasound system embodies a new dimension in ultrasound, delivering superb 2D, Color, Power, PW Doppler, M-mode, 3D, and 4D image quality, innovative imaging features, and superior connectivity within a portable ergonomic platform.

GENERAL INFORMATION

- Innovation in the areas of digital electronics and acoustics provides a 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 infrastructure, the revolutionary software for medical imaging
- ErgoDynamic™ imaging system design offers optimum access and operator comfort

ErgoDynamic Design – Form Follows Function

- User-centric HomeBase design helps to minimize repetitive hand motions required for image optimization, acquisition and management
- System control panel and monitor height adjustment for operator comfort in standing and sitting positions
- Re-positional wrist support to help reduce operator wrist stress
- Retractable keyboard for standard operations such as, text, annotations, body markers and special functions
- System control panel illumination via task lighting and backlit controls
- Portability: four-caster design with central braking system and mobile QuikStart standby mode



- Three-pedal programmable footswitch
- On-board storage area

Articulating Arm

- Flat panel monitor with fully articulating arm allows transition of monitor for optimal ergonomic positioning
- Articulation occurs independent of system and control panel
- Left/Right swivel articulation: 80 degrees in each direction
- Horizontal articulations: up to 30 cm
- Vertical articulation: up to 15 cm

QuikStart Standby Mode

QuikStart standby mode enhances system portability by reducing startup and shutdown times.

- Startup from standby in approximately 30 seconds
- Shutdown to standby in approximately 10 seconds

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, Japanese, Danish, Norwegian, Swedish, Portuguese, Dutch, Chinese

Flat Panel Display

- 19" (48.3 cm) high resolution flat panel monitor liquid crystal display with IPS (in-plane switching) technology
- Reduced glare in all working environments
- Flicker-free technology display
- Screen resolution 1280 x 1024
- High contrast ratio > 800:1
- Variable monitor positioning adjustments (height, swivel, tilt)
  - Range of height: 60.6 – 54.3 inches/ 154 – 138 cm (upright FPD)
  - Swivel: 80 degrees right, 80 degrees left
  - Tilt: +60 degrees forward, -10 degrees back
- Extended viewing angle: 178 degrees (horizontal and vertical)
- Fold down for transport or portable exams
  - Minimum fold down height 49.2 inches/ 125 cm
- Brightness = 270 cd/m^2
- Response Time = 7 ms

Hard Drive

- Up to 1.5 TB (depending on HW version)
- Image storage capacity up to 35,000 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/DVD-R

- 4.7 Gbyte; read/write DVD±R media
- 650 Mbyte; read/write CD-R media
- Storage capacity dependent upon writing session format, e.g., when the entire CD is written in one session, estimated storage of 400 images
- Allows storage of images, clips, volumes and transfer of presets across systems in DICOM interchange media format or PC format (.avi and .jpg)
- Supports system software and option upgrades

Audio Speakers/Microphone

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

Transducer Ports

- Three universal, 360-pin transducer ports that support standard, Multi-D™ matrix array transducers and Hanafy Lens technology transducers
  - Also supports advanced transducer technologies including *four*Sight™ 4D transducer technology
- Electronic transducer selection
- Easy-reach access to all transducer ports
- Aux CW port for 2MHz and 5MHz CW

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 holders for endocavity, intra-operative, Aux CW, and 4D transducer for easy access and safe storage

Scan Formats

- Sector: selectable field-of-view from 15 to 90 degrees
- Vector™ wide-view imaging format: selectable field-of-view up to 90 degrees
- Virtual Format: image formation supports image displays in linear, steered or trapezoidal format
- Trapezoidal: selectable field-of-view up to 60 degrees on linear transducers
- Steerable linear: variable steering angles for 2D, Color and Doppler modes
  - Maximum steering angle in color and spectral Doppler: 30° for VFX9-4 and VF10-5 transducers in CV, PV-A, and PV-V exams only
  - Beta angle viewing: beam steering available on EV9F4 transducer
- Curved: selectable field-of-view from 15 to 174 degrees depending on transducer

- Read/write zoom with image pan
  - Available on live, frozen, cine, dual screen images
  - Preserves full image resolution within the zoom ROI
  - Up to 10x zoom

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
  - Tissue Harmonic Imaging (THI)
- Color Doppler
- Power Doppler
- DTI (Doppler Tissue) PW spectral Doppler mode (for cardiac option)
- PW Doppler
  - Duplex Doppler
  - Triplex Doppler
- Doppler Tissue Imaging – Color and PW
- CW (Continuous Wave) spectral Doppler mode (for cardiac option)
- M-mode and color Doppler M-mode
- MultiHertz™ multiple frequency imaging
- SieScape™ panoramic imaging
- Color SieScape™ panoramic imaging
- Advanced SieClear™ spatial compounding
- eSie Touch™ elasticity imaging
- *syngo*® Velocity Vector Imaging™ technology
- *syngo*® Arterial Health Package (AHP)*
- *syngo*® Auto OB Measurements
- Axius™ direct ultrasound research interface
- TEQ™ ultrasound technology for 2D and spectral Doppler
- SieClear™ multi-view spatial compounding
- 3-Scape™ real-time 3D imaging
- Cadence™ contrast pulse sequencing technology**
- Clarify™ vascular enhancement technology
- Extend imaging technology
- Advanced *four*Sight technology

Beamforming in 2D Imaging

Next-generation beamformer with the following features: 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 29952 processing channels on ACUSON Antares system
- 2D-mode line density up to 512 lines
- Total system dynamic range of > 160 dB
- 2D-mode up to 500 frames per second
- Color frame up to 305 frames per second
- Depth display: .5 to 30 cm

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 90 dB in five-decibel increments; 30 – 90 dB in five-decibel increments

** This feature should be utilized according to the ASE Consensus Statement "Use of Carotid Ultrasound to Identify Subclinical Vascular Disease and Evaluate Cardiovascular Disease Risk: A Consensus Statement from the American Society of Echocardiography Carotid Intima-Media Thickness Task Force, Endorsed by the Society of Vascular Medicine."*

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- Gain: -20 to 60 dB in one-decibel increments
- Depth gain compensation: eight DGC controls
- Up to eight user-selectable 2D maps (A – H)
- Up to twelve user-selectable 2D tint maps (0 – 11)
- Dynamic Tissue Optimization: 4 levels (Off, 1-3) (for cardiac option)

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 30 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, color and Doppler modes
- Curved: selectable field of view from 15 to 174 degrees, in one-degree increments, depending on transducer
- Read/write zoom with image pan
  - Available on live, frozen, cine, dual screen 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

- Unlimited 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 Trace, 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 2D or THI, color and spectral Doppler independently for optimal choice of image resolution, penetration and sensitivity. Specifics include:

- Up to 5 frequencies in 2D and M-mode
- Up to 5 frequencies in Tissue Harmonic Imaging (THI)
- Up to 4 frequencies in color Doppler modes
- Independent frequency selection in 2D or Tissue Harmonic Imaging (THI), color and Doppler modes
- Up to 4 frequencies in Pulsed Wave (PW) modes
  - High Pulse Repetition Frequency (HPRF)
- Up to 3 frequencies in steerable Continuous Wave (CW) modes

Tissue Harmonic Imaging

Tissue Harmonic Imaging (THI) delivers a higher level of diagnostic information for the difficult-to-image patient. 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 all transducers
- Available in M-mode and Color M-mode
  - Compatible with advanced imaging options including SieClear compounding, SieScape imaging, 3-Scape imaging, TEQ technology, Cadence CPS technology*, Clarify VE technology, and *four*Sight 4D 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)
- 2D/C/CW mode(for cardiac option)
- 2D/DTI (for cardiac option)
- 2D/DTI/DTPW (for cardiac option)
- 2D/DTI/Color Doppler M-mode (for cardiac option)
- 2D/CDV/Color Doppler M-mode (for cardiac option)

Pulsed Wave Doppler

- Available on all transducers
- Up to four user-selectable transmit frequencies
- Spectral TEQ technology
- 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

** 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.*

- 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
- 2D/CW, simultaneous or update (for cardiac option)
- CW (for cardiac option)
- 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

Color M-mode is 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

eSie Touch Elasticity Imaging

eSie Touch elasticity imaging is a real-time qualitative imaging method that calculates and displays the relative stiffness of tissue.

- Proprietary technology uses minimal compression
- Works with normal respiration and cardiac rebound
- Transducers supported: VFX13-5, VF13-5, VF10-5, VFX9-4
- Live dual image display of elastogram and standard 2D-mode image
- Unique mapping options in grayscale and color facilitate interpretation of the elastogram
- Area and distance ratio measurement capability
- Advanced SieClear spatial compounding provides image quality with unrivaled detail and contrast resolution
- Fatty Tissue Imaging provides enhanced 2D-mode image quality via a speed-of-sound algorithm adaptation, resulting in improved lateral and contrast resolution for superior ultrasound imaging of the fatty breast

*four*SIGHT 4D ULTRASOUND IMAGING TECHNOLOGY

Our fourSight 4D technology adds a new dimension to superb 2D, Color, Doppler, and 3D imaging, providing the best-in-class, complete ultrasound solution system for all general imaging applications.

fourSight 4D technology expands the utility of diagnostic ultrasonography, providing comprehensive real-time data of anatomical structures and pathology displayed simultaneously in multiple views.

The flexible and powerful system architecture of the Antares system allows for a seamless upgrade to fourSight 4D imaging. The EV9F4, C5F1 and C7F2 4D imaging transducers support all 3-Scape imaging features as well as other Antares system advanced imaging technologies.

All basic 3D/4D controls are centrally located on the ergonomic control panel, reducing the amount of reaching required for 4D acquisition. A streamlined and intuitive workflow supports storage of 3D/4D volumes, bookmarks, 4D cine clips and static images, and all can be stored with one button press. Four screen format displays are offered, including side-by-side and four-quadrant asymmetric display.

Easy-to-use controls adjust line density and elevation slice spacing, for optimal volume rate and image quality control during setup as well as live 4D imaging. Basic editing and rendering tools include: parallel cut, polygon, trace, niche, large and small eraser, undo last, undo all and 4D cine during live imaging and on frozen images. 4D cine and clip functions provide adjustable control of the clip and cine length. Advanced editing and rendering tools include: multi-slice format, thick-slice imaging, curved-top volume of interest (VOI), curved MPR, gradient light imaging, and sub-states.

***four*Sight 4D Imaging – Rendering Modes and Calculations**

- Maximum volume rate: 33 vps
- Sub-States optimized settings
- Gradient Light surface rendering
- MultiSlice format (up to 36 slices)
- Thick-Slice Imaging
- Curved-Top VOI contours the view plane shape
- Curved MPR
- Minimum intensity projection (min IP) rendering mode
- Maximum intensity projection (max IP) rendering mode
- Mean intensity projection (mean IP) rendering mode
- Opacity rendering mode
- 2D Linear measurements on MPRs for the current and recalled exams:
  - Distance
  - Volume (D1 x D2 x D3)
  - Trace

3-Scape Imaging

- 3D freehand acquisition
- 3D Auto-Sweep offers a streamlined method of data acquisition in both 2D and Power modes

syngo AUTO OB MEASUREMENTS

Siemens' innovative Auto OB algorithm provides automated measurements of four major fetal structures required for biometric measurements: BPD, HC (OFD), AC and FL. This unique technology eliminates the need for user input in performing measurements. Measurements, once accepted, are treated as normal measurements and saved to the report.

AMNIOSCOPIC RENDERING

A unique rendering mode that incorporates several technologies to create a more accurate, realistic representation of the fetus. This rendering mode includes lighting modes like gradient light, but also a diffusion technique that creates the realistic view.

SIESCAPE 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 240 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 imaging image
- 2D standard measurements and reports are available

COLOR SIESCAPE 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 240 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 imaging image

3-SCAPE REAL-TIME 3D IMAGING

3-Scape imaging provides real time capture and display of volume data using standard, Multi-D matrix array, Hanafy Lens and fourSight 4D imaging transducers.

- Volume Clip Transfer feature provides a volume-to-clip conversion of all 3 orthogonal planes, significantly speeding up data transfer for improved radiology workflow in 4D imaging
- 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
- Editing tools, rendering methods such as opacity, and zoom functions available
- Available on all transducers
- Compatible with other advanced imaging options including THI, SieClear multi-view spatial compounding, TEQ technology and Clarify VE technology
- 3-Scape imaging utilizes the *four*Sight 4D technology transducers to automatically acquire a real-time volume

TEQ TECHNOLOGY

TEQ™ ultrasound technology is a sophisticated signal-processing technology that automatically equalizes tissue gain and brightness providing consistent, reproducible image quality in 2D and THI 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 mode transitions (2D/THI)
- Preset option for auto-refresh upon unfreeze events

- Compatible with other advanced imaging options including THI, SieScape imaging, 3-Scape imaging, Advanced SieClear spatial compounding and SieClear multi-view compounding, Cadence CPS technology*, and Clarify VE technology

SPECTRAL TEQ TECHNOLOGY

TEQ technology is available with an automatic optimization feature for PW Doppler. Spectral TEQ technology, migrated from the ACUSON Sequoia™ ultrasound system, optimizes gain, baseline, scale, and dynamic range with a single button press. Spectral TEQ technology works in compatible imaging modes such as 2D, color and power, and works in conjunction with other Antares system advanced imaging features.

EXTEND IMAGING TECHNOLOGY

Extend imaging technology improves 2D/THI, color and power Doppler performance especially with technically difficult-to-image patients by momentarily enhancing 2D/THI penetration and color/power sensitivity. It visualizes blood flow in conditions which usually make it difficult to demonstrate.

- Available on the C7F2, CH6-2 and CH4-1 transducers
- Available with THI, 2D/THI, color, power and PW Doppler modes

ADVANCED SIECLEAR SPATIAL COMPOUNDING

This real-time spatial compounding technique electronically beam steers a transducer array to rapidly acquire several overlapping images from different angles. This provides exceptional improvements in contrast resolution and border definition.

- Industry-best up to 13 steering angles available on linear transducers, 9 available on curved array transducers
- Dynamic TCE™ technology is an advanced post processing method for speckle reduction and edge enhancement. Three levels available: low, medium and high
- Unique Tissue Stabilization feature reduces the artifacts seen in compounded images, yielding unprecedented image clarity
- Compatible with U/O and L/R flip
- Available on all linear and curved array transducers
- Supports all primary and secondary exam types
- Compatible with other advanced imaging modes including THI

SIECLEAR COMPOUNDING

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

- Improves contrast resolution and border detection
- Available on all transducers
- Accessible in THI and color/Doppler modes
- Compatible with standard imaging modes such as 2D, color, power, PW Doppler and M-mode
- Compatible with other advanced imaging options including THI, SieScape imaging, Color SieScape imaging, 3-Scape imaging, TEQ technology and Clarify VE technology

CLARIFY VE TECHNOLOGY

Clarify VE technology is a patented, real-time, adaptive technology that uniquely uses power Doppler flow information to enhance 2D-mode imaging.

- Clarify VE technology reduces noise within macro–and microvascular structures, provides clearer vessel wall definition with improved tissue boundary detection, and enhances tissue contrast resolution without compromising spatial resolution
- Factory presets optimized for each exam type
- Seven user selectable levels

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- Available on all transducers
- Compatible with other advanced imaging options including THI, SieClear multi-view spatial compounding, SieScape imaging, 3-Scape imaging and TEQ technology

syngo ARTERIAL HEALTH PACKAGE (AHP)

syngo Arterial Health Package (AHP)* features an automated carotid intima-media wall thickness (CIMT) measurement with Vascular Age (based on the Stein algorithm) and Framingham Risk Factors, to help cardiovascular specialists evaluate arterial health. This reliable, non-invasive assessment tool can empower physicians and patients to combat atherosclerosis in its earliest stages by optimizing proactive treatment and preventive care.

- Automated CIMT measurement incorporated into patient database
- Calculated Vascular Age with individualized results
- Distensibility and elasticity measurements
- Framingham Risk Factors assessment based on calculated vascular age
- Validated for adult patients, 40-70 years of age with no prior history of cardiovascular disease
- Delivers comprehensive reports of patient results
- Automated with consistent measurements
- Color coded "at risk" areas highlighted on clinical images
- Customizable patient demographics and protocols

CADENCE CONTRAST PULSE SEQUENCING TECHNOLOGY**

Cadence CPS technology, migrated from the ACUSON Sequoia system, utilizes precise control of phase and amplitude on both transmit and receive. Processing the strong nonlinear fundamental and higher order harmonic signals from contrast agents, Cadence CPS technology** provides incredibly sensitive agent detection with outstanding enhancement uniformity.

- MultiHertz multiple frequency imaging provides improved fine-tuning for low-MI contrast investigations
- Optimized for CH4-1, CH6-2, PH4-1, PX4-1, VF10-5 and VFX13-5 transducers, to provide expanded scanning versatility
- Integrated burst/reflow control for destruction-reperfusion investigations
- Provides instantaneous real-time selection of tissue-only or contrast agent only displays
- On-screen stopwatch feature

Cadence CPS technology**, with Cadence™ agent detection imaging (ADI) technology**, is specifically designed for high-MI imaging. High intensity transmit pulses detect bubbles for loss of correlation (LOC) imaging. Cadence ADI technology** can be used to detect early phase vascularity or late phase lesions.

- Provides instantaneous real-time selection of tissue-only or contrast agent only displays
- Hanafy Lens transducer technology yields a display that is less focal zone dependent
- Cadence CPS technology is available on the CH4-1, PH4-1, PX4-1, CH6-2, VF10-5 and VFX13-5 transducers
- Cadence ADI technology is available on the CH4-1, PH4-1 and CH6-2 transducers
- User-selectable colorization maps allow for enhanced visual conspicuity of contrast agent

syngo VELOCITY VECTOR IMAGING (VVI) TECHNOLOGY

A dynamic 2D method to visualize, measure and display global and regional myocardial motion and mechanics. Available on and off the system.

- Uses grayscale images and a sophisticated tracking algorithm to determine the velocity and direction of myocardial tissue motion and displays it in a dynamic vector presentation overlapping the 2D clip

** Refer to page 4.*
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- Base of vectors track tissue motion
- Length of vector indicates how fast tissue at the base of the vector is moving
- Direction of vectors point in the direction of tissue motion
- Algorithm allows for processing ultrasound clips obtained in all views of the heart, as well as for generic moving tissue (e.g. vessel wall)
- Not limited by color Doppler dependencies of frame rate, angle or mean velocities
- Compatible with all Antares platform transducers
- *syngo*'s tracking algorithm incorporates multiple sources of information, including speckle tracking:
  - Manual tracing of the myocardial border on any single frame of a clip
  - Mitral plane motion tracking
  - Tracking of the inward and outward motion of the tissue border
  - Tissue motion along the border trace using sophisticated speckle tracking
  - Periodic motion of the heart
  - Spatial coherence of tissue motion
- Parameters and parametric displays supported by *syngo* include:
  - Visual assessment of wall tracking
  - Visual assessment of vector dynamics
  - Display of time curves of the selected velocity vector components
  - ECG display
  - Individual heart beat, or average of multiple heart beats analysis
  - Parametric color M-mode display of a selected component of Tissue Velocity along the dynamic tissue border trace over time
  - Parametric color M-mode display of Tissue Strain along the dynamic tissue border trace over time
  - Up to 20 different points can be selected on the 2D image along the trace for graphic displays of Velocity, Strain and Strain Rate combined display or full-screen magnification
- 3D representations of parametric color M-mode displays along the trace over time for:
  - Selected components of Tissue Velocity
  - Tissue Strain
  - Tissue Strain Rate
  - Pan, Zoom, Rotate of the 3D parametric display
- Time curves of global and segmental (6-segment model) LV volumes automatically calculated by Simpson method
- Parametric color display of automatically calculated global and segmental Ejection Fraction
- Time curves and measurements of Dmin (transverse diameter) and Dmax (longitudinal diameter)
- Simultaneous display of volume time curves and measurements for current and previous cases
- Synchrony analysis
  - 6-segment chamber model
  - Time curve display and measurements for segmental tissue motion parameters: Velocity (Tangential or Radial), Strain (Tangential), Strain Rate (Tangential) and Displacement (Tangential or Radial)
  - Automatic time-to-peak and phase analysis of all motion parameter curves
  - Parameter color 6-segment model display of Time-to-Peak and phase information for Velocity (Tangential or Radial), Strain (Tangential), Strain Rate (Tangential) and Displacement (Tangential or Radial)
- An arbitrary, multi-segment M-line can be selected on a 2D clip display to obtain virtual M-mode information derived from a 2D clip. Virtual M-mode can be used as a background for time curves providing reference on cardiac cycle phase
- Compatible with standard acquisition frame rate clips, and acoustic clip capture (e.g. isovolumetric contraction and relaxation events)

DTI DOPPLER TISSUE IMAGING CAPABILITY *(FOR CARDIAC OPTION)*

DTI™ Doppler Tissue Imaging capability uses Siemens' proprietary multivariate motion discrimination technology for processing Doppler frequency shift information from moving tissue (e.g., myocardium, heart valves, etc.) and displays physiologic data on velocity, acceleration and scattering capabilities of moving tissues in several imaging and strip display capabilities. It provides additional clinical and investigational information on myocardial function during transthoracic studies.

- DTI Doppler Tissue Imaging Option includes the following color Doppler capabilities and features:
  - DTI Velocity (DTV) capability
  - DTI Acceleration (DTA) capability
  - DTI Energy (DTE) capability
- DTI capability in color Doppler M-mode

DTI Velocity (DTV) Capability

Provides real-time imaging display of tissue mean velocities in the sampling area within the user-selected region of interest using various, user-selectable color-coding maps.

- Available in Cardiology imaging
- Level: independent signal gain adjustment
- Priority: 5 settings, 0-4
- Filter: 4 settings 0-3
- Res Speed control: 6 settings, 0-5 to achieve desired spatial and temporal resolution for each study
- Persistence: 5 levels, for color frame temporal averaging, allowing smoothing of tissue motion information over time
- Smooth: 4 levels, for smoothing tissue motion information in two spatial dimensions
- Maps: optimizes a real time or frozen DTV image: 6 Velocity maps

DTI Acceleration (DTA) Capability

Provides real-time imaging display of the rate of change of tissue velocity in the sampling area (tissue velocity difference between consecutive ultrasound frames) within the user-selected region of interest using various, user-selectable color-coding maps.

- Available in Cardiology imaging
- Level: independent signal gain adjustment
- Priority: 5 settings, 0-4
- Filter: 4 settings, 0-3
- Res Speed control: 6 settings, 0-5 to achieve desired spatial and temporal resolution for each study
- Smooth: 4 levels, for smoothing tissue motion information in two spatial dimensions
- Maps: optimizes a real time or frozen DTA image: 6 Acceleration maps

DTI Energy (DTE) Capability

Provides real-time imaging display of the intensity of Doppler signals returning from tissue within the user-selected region of interest using various, user-selectable color-coding maps.

- Available in Cardiology imaging
- Level: independent signal gain adjustment
- Priority: 5 settings, 0-4
- Filter: 4 settings, 0-3

** 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.*

- Res Speed control: 6 settings, 0-5 to achieve desired spatial and temporal resolution for each study
- Persistence: 5 levels, for color frame temporal averaging, allowing smoothing of tissue motion information over time
- Smooth: 4 levels, for smoothing tissue motion information in two spatial dimensions
- Maps: optimizes a real-time or frozen DTE image: 6 Energy maps

STRESS ECHO

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.

- Standard acquisition protocols for treadmill, ergometric, and pharmacological stress with
  - Dobutamine Stress Echo
  - Ergometric Continuous R-R
  - Ergometric Continuous
  - Ergometric Stress Echo
  - Treadmill Continuous R-R
  - Treadmill Continuous
  - Treadmill
- Full screen or ROI (Region Of Interest) acquisition
  - Complete R-R capture with clip editing
- Easy workflow throughout the exam protocol
- Prospective continuous capture (up to 120 seconds) or retrospective labeled capture
- 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 and 16-segment models 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
- 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
- Numbering of clips for easy selection

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 for both forward and reverse directions
- 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 image frames (2D & 2D/C)[1]
- Maximum cine memory 4096 frames (2D imaging)
- Up to 30 seconds Doppler cine, or up to 25 seconds M-mode cine
- Available in full screen & dual screen display
- Editable loop margins

[1] *Values dependent on frame rate, line density, etc.*

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
  - 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

ECG and Physiologic Module

- Built-in ECG and physiologic signal module providing:
  - On-screen ECG trace in B, M and Doppler imaging modes
  - ECG sync with PW, sCW or M-mode
  - ECG signal for triggering
  - Auxiliary trace of the conditioned signal from any compatible accessories or monitors
- Detected and displayed heart rate, averaged over 5 second intervals, updated at one second interval
- Standard range: 30 to 300 beats per minute

SYSTEM SOFTWARE

The core software architecture of the Antares system is based upon syngo system, the revolutionary software for medical imaging. The syngo system 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* system 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 system begins at the front-end with wideband MultiHertz imaging, and unique, Multi-D matrix 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 and four color and pulsed Doppler frequencies, expanding the clinical capability of a single transducer, and thereby maximizing transducer performance.

The V5Ms transesophageal multiplane echo-cardiography transducer is a 64-element wide bandwidth phased array transducer shielded for RF suppression.

- 180 degree motorized crystal rotation
- Tip articulation range: anterior: 120°, Posterior: 90°, Left/Right 45°
- 90 degree field of view
- One-hand control, ergonomically designed form factor
- User-selectable MultiHertz multiple frequency imaging
- 2D-mode, M-mode frequencies: 7 MHz, 6 MHz, 5 MHz, 3.5 MHz

- PW, DT, PW, HPRF, CW Doppler Frequency: 3.5 MHz
- Adjustable transmit focusing
- High frame rate acoustic clip capture

The flexible architecture of the Antares system also allows integration of fourSight 4D transducer technologies. The Antares system's 4D transducers produce high quality, geometrically accurate volume data for MPR images to obtain views not available with standard 1D array transducers. Multiple frequencies are available in all imaging modes to further expand clinical utility.

- Wideband MultiHertz imaging allows user selection of 2D and color frequency for optimal resolution and penetration
- Next generation Multi-D matrix 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: 1.0 – 13.0 MHz
- *four*Sight 4D transducer technology provides superior image quality, contrast and detail resolution in 2D, 3D and 4D imaging modes

APPLICATIONS

The Antares system is designed to support all General Imaging and Cardiac applications. Factory-defined imaging presets have been clinically optimized for each exam and transducer 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 pictograms, customizable text and measurement labels, worksheets and reports.

- Abdominal
- Renal
- Obstetrics
- Breast
- Fetal Echo
- Gynecology
- Neonatal
- Pediatric
- Cerebrovascular
- Peripheral Vascular (arterial, venous, digital)
- Small Parts (breast, testicle, thyroid)
- Musculoskeletal & Superficial Musculoskeletal
- Transcranial
- Urology (penile, pelvis, prostate)
- Intra-operative (vascular)
- Cardiac (adult, pediatric and neonatal)

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

- Gestational age and Estimated Date of Confinement (EDC) by LMP or IVF
- Gestational 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
- Gestational age by multiple parameters
- Estimated Date of Confinement by ultrasound age
- Estimated Fetal Weight (EFW)
- Singleton, twin, triplet or quadruplets
- User defined OB tables
- User defined fetal and maternal assessment checklist
- Serial (historical) growth trending – import up to 20 previous exams
- Export of data with serial cable, to Windows file share location or DICOM SCP

Growth Evaluation

- Ratios: Cephalic Index (CI), HC/AC, FL/AC, FL/HC, FL/BPD, LVW/HW, TCD/AC
- Curves: AC, APAD, 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), Transabdominal Diameter (TAD), Thoracic Circumference (TC), Trans-cerebellar 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, Fetal Trunk Area (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, Ductus Arteriosus (DA), isthmus, PA, MPA, Umb A
- Valves: AV
- Veins: SVC, IVC, L Pulmon V, R Pulmon V, Umb V

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, RA, TV, RVAW, RVID, PV, PA, RVET

Annotations and Pictograms
Worksheet and Report

Breast

- Proprietary technology uses minimal compression
- Transducers supported: VFX13-5, VF13-5,

VF10-5, VFX9-4
- Live dual image display
- Area and distance ratio measurement capability
- Advanced SieClear spatial compounding
- Fatty Tissue Imaging

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

Annotations and Pictograms
Worksheet and Report

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 trunk, posterior tibial artery, anterior tibial artery, peroneal artery, dorsalis pedis artery
- Upper extremities: innominate artery, common carotid artery, vertebral artery, subclavian artery, 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

Cardiac

2D Labeled Measurements

- Mitral Valve function including: EPSS, MVA(PHT), MVA(VTI), LVOT diameter, MVA(Trace), MV Area, CO, LVIMP, HR(edit) AV/LA, RV diameter, AoRoot diameter, ACS, LA diameter
- Aortic Valve Function including: AVA(VTI), AVA(Vmax), AVA (trace), VSD, LVSTI, HR
- Pulmonary Valve Function including: CO, RVOT diameter, VD
- PISA(MR) including: Radius, Aliasing Velocity
- PISA(MS) including: Radius, Aliasing Velocity, Angle
- LV Dimensions including: RVAWd, RVDd, Diastole, EVSd, LVIDd, LVPWd, Systole, IVSs, LVIDs, LVPWs
- LV Mass (Truncated Ellipse) including: A Sax Epi, A Sax Endo, a, d
- LV Mass (Area and Length) including: A Sax Epi, A Sax Endo, LVL
- CO: LVOT VTI, LVOT Diam, HR
- 2D mode calculation labels including: CI, CP, EDV and ESV, EF, FS, SI, SV,t, b, AO/LA, LV Mass-I, LV Mass T-E, LV Mass A-L
- Left Ventricular Function Assessment including:

Simpson Single Plane, Simpson Bi-Pland, Cubed formula, Teichholz Formula

Doppler labeled measurements

- Aortic Valve Function including: AV VTI, LVO VTI, IVRT
- Aortic Valve Area Velocity Time Integral including: AV VTI, LVOT VTI
- Aortic Valve Area including: AV Vmax, LVOT Vmax
- AVA(Trace)
- Ventricular Septal Defect including: VSD Vmax
- Left Ventricular Systolic Time Interval including: LVET, LVPEP, HR
- Mitral Valve Function including: E Dur, A Dur, IRVT, MV E pt, MV A pt,
- MVA(PHT)
- Mitral Valve Area Velocity Time Integral including: MV VTI, LVOT VTI
- MVA(Trace)
- Cardiac Output including: MV VTI, HR
- Left Ventricular Index of Myocardial Performance (LVIMP) including: LVET, MV C-Odur
- Tricuspid Valve Function including: TV Vmean, TV Vmax, TV E pt, TV A pt
- Right Ventricular Index of Myocardial Performance (RVIMP) including: RVET, TV C-Odur
- Pulmonary Valve Function including: PV Vmax, RVET, RV Act, RVPEP, PA Act
- Cardiac Output including: PV VTI, HR
- Pulmonary Vein Function including: PVs1 Vel, PVs2 Vel, PVd Vel, PVa Vel, PVa dur, PVs VTI, PVd VTI, PVd Dect
- Aortic Regurgitation including: Decel Time, AI PHT
- Tricuspid Regurgitation including: TR Vmean, TR Vmax
- Pulmonary Regurgitation including: PR Vmean, PR Vmax, PR Ved
- Mitral Regurgitation including: MR Vmax, dP/dt
- PISA(MR) including: Aliasing Vel, MR VTI
- PISA(MS) including: Aliasing Vel, MS VTI, Angle
- Doppler Tissue Imaging including: MV medial, Ez, AR/DR, Aa, Sa, MV lateral, Ea, AR/DR, Aa, Sa,
- Doppler Calculation labels including: A/E, E/A, CA/CE, MV PGmax, MV PGmean, CO, MR PGmax, AR PGmax, AV PGmean, PV PGmax, PV PGmean, PR PGmax, PR PGmean, PAEDP, TR PGmax, TR PGmean, RVSP, LVOT PGmax, LVOT PGmean, VSD PGmax , TV PGmax, TV PGmean, AR PGmax, MS PGmax, LVIMP, RVIMP, HR, Ea/Aa, E/Ea, MVA(VTI), AVA(VTI), Qp/Qs, Qp-Qs

M-mode Labeled Measurements

- AV/LV (M) including: RV diam, Ao Root Diam, ACS, LA diam, LVET, LVPEP
- Mitral Valve including: CE amp, CA amp, DE excursion, DE amp, EPSS, EF Slope
- Right Ventricular Dimensions including: RV diameter
- Left Ventricular Dimenstions including: RVDd, Diastole, IVSd, LVIDd, LVPWd, Systole IVSs, LVIDs, LVPWs, LVET, HR
- M-mode calculation labels including: CI, CO, EDV and ESV, EF, AO/LA, HR, SI, SV, LV Mass, LV Mass-c, LV Mass-I, mVcf

Worksheet and Report

Musculoskeletal/Superficial Musculoskeletal

Annotations and Pictograms
Worksheet and Report

Breast

2D

- Masses

Annotations and Pictograms
Worksheet and Report

Testis

2D-mode Measurements

- Testicle, epididymis, 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, Post-Injection Cav, Urethra

Doppler Measurements

- Iliac A, Dorsal A, Urethral A, Bulbar A, Brach A, Cavernosal A, 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 integrated workstation provides access to ultrasound images and data with the power to support image capture and compression, digital dynamic clips, 3D/4D volumes, 4D cine, measurements and calculations, and patient file storage in DICOM format for CD/DVD±R archiving and transfer via network connections.

Users can save and recall color and black/white images as well as digital dynamic clips and volumes on the system's internal hard drive and read/write CD/DVD+R disks. Each image or clip stored or printed to the network (DICOM users) is duplicated on the hard drive for data safety.

Image Capture

- PC compatible file formats for all images and clips (.avi and .jpeg) or DICOM format
- Static image capture
- Dynamic clip capture
- Strip mode clip capture
- 3D/4D datasets or bookmarks
- Cine capture (forward and reverse)
- Selectable lossy and loss-less compression for static images
- High speed JPEG compression for clip captures
- Storage capacity: greater than 35,000 still images or 12,000 three second clips

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 retrieved from the patient browser 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 Service Class

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

DICOM Print

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

DICOM Query Retrieve (Q/R)

- Allows Retrieving studies on compatible PACs workstations

DICOM Worklist

- Allows the user to download patient

demographic data from a Hospital or Radiology Information System's (HIS/RIS) 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

DICOM Structured Reporting

- Allows organized transfer of calculation data to PACs systems in either supported public elements, or in private elements for measurements not supported by DICOM S/R
- Available for OB/GYN, Cardiac and Vascular Calculation data
- Structured reporting data may be transferred to DICOM Storage Devices or Network File Share

Siemens Ultrasound Division's Antares system 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/P93D B/W printer
  - Mitsubishi CP-770 DW 4x3 color printer
  - Sony UP55MD A5 format color printer
  - Supported interfaces for reports printers: HP6122, HP4050, HP4000, HP4200, HP2500n, HP1150, HP1320, HP2600N, and Lexmark E340
  - Sony UP23 MD color printer

System Connections Supported

- Network
  - 10-base T ethernet (RJ-45 Connector)
  - 100-base T ethernet
- Peripherals
  - RS232, serial and parallel ports
  - USB 2.0

SYSTEM DIMENSIONS

- System height: 137 cm - 151 cm (53.9 in - 59.4 in) (upright FPD)
- 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: 137 cm (53.9 in) measured to top of monitor
  - Monitor highest position: 151 cm (59.4in) measured from top of monitor

ELECTRICAL/ENVIRONMENTAL SPECIFICATIONS

- 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

- Maximum fan noise: 48 – 50 dBA
- 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

STANDARDS COMPLIANCE

The Antares system meets the requirements of the Medical Device Directive and carries the CE mark.

Quality Standards
FDA QSR 21 CFR Part 820
ISO 9001
ISO 13485
EN 46001

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 IEC 60601-2-37

Acoustic Output Standards
- IEC 61157 (Declaration of Acoustic Power)
- AIUM/NEMA UD-2, Acoustic Output Measurement Standard for Diagnostic Ultrasound
- AIUM/NEMA UD-3, 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. The CE marking only applies to medical devices that have been put on the market according to the above reference Council Directive. Unauthorized changes to this product are not covered by the CE marking and the related Declaration of Conformity.

CE 0123

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Siemens Medical 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.

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