

XR-CATH LAB, VAMC SAN FRANCISCO, CA

PO# 662-B50004

Qty	Item Description
1	<p>Artis Q ceiling BC Interv. Rad.</p> <p>Artis Q ceiling radiology The Artis Q product line is setting new standards in interventional imaging. The GIGALIX X-ray tube, which has been completely redeveloped, is based on flat emitter technology which provides small focus sizes and strong, short X-ray pulses. CLEARpulse uses flat emitter technology to generate optimized short X-ray pulses, thereby providing an improved sharp display of moving vessels. Configuration: The ceiling-mounted C-arm offers highly flexible positioning of the C-arm around the patient table. The motorized movement of the C-arm from a head-end position to a lateral position provides free access to the patient's head and can reach from their head to their foot. The patient table with telescopic foot is fitted with a freely movable patient positioning tabletop, which can bear a maximum patient weight of 250 kg. The table can be rotated to ensure quick access to the patient even in emergency situations. The as40HDR flat detector is optimized for the requirements of radiology and allows for steep angulations. The CLEAR package for optimizing image post-processing and the CARE package for dose reduction are included. This basic configuration includes digital acquisition technology and Digital Subtraction Angiography up to 7.5 f/s in 1k matrix. Images are displayed using a display suspension system with two 19" flat displays for live and reference image display in the examination room and a monitor in the control room. DICOM standards are supported and the system is prepared for remote maintenance.</p>
1	<p>Head-end table tilting</p> <p>Motorized tilt and stepping of the patient table in longitudinal direction for electrophysiological or peripheral examinations, for example, as well as for stabilizing a patient. Includes a power-assisted tabletop control module. Notes: Table tilting reduces the maximum patient weight to 200 kg. As before however, it is possible to install up to 40 kg of additional accessories. Note: It is mandatory to provide UPS back up with this table option in order to comply with IEC 60601-2-43 CL. 201.15.101. Reason: In the event of power failure a neutral table position suitable for CPR must be reachable within 15 seconds. Please include a suitable UPS from Siemens as required or make sure any existing / planned UPS provision for your installation site will satisfy the requirement</p>
1	<p>PERISTEPPING / PERIVISION</p> <p>Motorized stepping for real-time bolus chasing. C-arm stepping with ceiling mounted systems, table stepping with floor mounted and biplane systems. Peripheral digital angiography with stepping and online subtraction display.</p>
1	<p>2K acquisition</p> <p>Acquisition and storage of single images and series with a resolution of up to 4.76 megapixels (2480 x 1920) at up to 7.5 f/s. The 2k acquisition is valid for DR, DSA, 3D acquisitions and PERIVISION, and affects full format, Zoom 1, and Zoom 2.</p>

Qty	Item Description
1	Laser crosshairs Laser crosshairs integrated in the cover of the flat detector and tableside operation for easier, quicker and dose-saving positioning of the patient.
1	DYNAVISON DSA/DR Native or subtracted digital rotational angiography with angle triggering.
1	narrow TT thin mat. ins. of std. TT Narrow-shaped carbon fiber patient positioning tabletop with head-end recess, ideal for cardiological applications. Tabletop tapered in the thorax area for maximum freedom of C-arm angulation. Matching the narrow tabletop, special-foam mattress, 4 cm, made of open-pore polyurethane material and a latex-free cover. Note: The narrow patient positioning tabletop with the thin mattress replaces the wide tabletop, including mattress, described in the basic configuration.
1	4P wireless footswitch inst. of cbl Wireless footswitch connection Note: Wireless replaces the wired connection.
1	syngo interv. Oncology Engine Pro This engine bundles the comprehensive functionality for oncological interventions and transcatheter as well as ablative therapies. In addition to 3D rotation software for the acquisition system, the package contains a syngo X Workplace and the software applications syngo InSpace 3D, syngo DynaCT, syngo DynaPBV Body, Inroom Control, syngo InSpace 3D/3D Fusion, syngo Embolization Guidance, iPilot (enhanced functionality), Angio Viewer (including syngo iFlow and Scene Compare), syngo iGuide, as well as syngo Expert-i.
1	syngo DynaCT Micro Enables unique detail resolution (+40%) in interventional 3D imaging by using all detector pixels in a 22 cm image size with reduced dose. As a result, the smallest structures such as Cochlear implants or stents can be displayed in the best possible manner.
1	syngo iGuide Toolbox syngo iGuide Toolbox contains the functions 'Linked Marker', 'Linked Pointer', and 'Linked Contours' These allow graphics drawn in a 3D volume to be displayed on the live monitor simultaneously. The graphics can be used to preplan interventions on the syngo workplace, whereby points or areas in the 3D volume can be marked and then linked to the display on the live monitor in real time.
1	syngo FlyThrough Standalone Fly-Through standalone for simulation of virtual endoscopy or bronchoscopy and for Fly-Through in vascular structures, where real endoscopic procedures could be impossible.
1	syngo InSpace 3D Stenosis Meas. InSpace 3D Stenosis measurement to determine the degree of stenosis in subtracted image volumes.
1	Mem. enhncmnt. 3 (50k - 1k Matrix) Memory capacity extended by 25,000 images, from 25,000 images to 50,000 images in 1k matrix.
1	Mem. enhncmnt. 4 (100k- 1k Matrix) Memory capacity extended by 50,000 images, from 50,000 images to 100,000 images in 1k matrix.
1	Vascular analysis Vessel analysis with determination of degree of stenosis, distance measurement and calibration.
1	Fluoro Loop Storage and review of dynamic fluoroscopic sequences (Fluoro Loop). This saves an additional acquisition and reduces dose. The maximum storable fluoroscopic time depends on the selected pulse rate, e.g. 34 s at 30 p/s, 68 s at 15 p/s.

Qty	Item Description
1	Automap Automatic stand positioning depending on the selected reference image and automatic reference image selection depending on the stand positioning.
1	DICOM RIS-Modality Worklist Import of patient/examination data from an external RIS/HIS patient management system with DICOM MWL (Modality Worklist).
1	DICOM Print Provision of DICOM Print service for connection to a laser camera or a network printer (postscript-capable).
1	Lower body radiation protection For shielding the lower body against scattered radiation within the examiner's moving range. Specially designed for avoiding collisions with the tube during oblique projections, therefore especially suited for cardiology.
1	Mobil upper body rad. Prot. XL Larger shield to improve protection of the upper body against scattered radiation within the operating range of the examiner, e.g. during interventional procedures especially by performing radial access. Two scattered radiation protection blankets are included to cover the patient's body in order to increase the reduction rate of scattered radiation. A protection curtain at the screen is also included in order to reduce the scattered radiation and to close the gap between patient and shield
1	LED Surgical Light (Comfort) Ceiling-mounted full-size LED OR light with variable focusing of the light field for optimum illumination especially in deep wound areas. Adjustable color temperature for optimal detection of details in the wound area. Suitable for diagnostic and interventional applications as well as surgery
1	Large Display large work area 60" or 56" color flat screen display including cables for the examination room, installed on a ceiling-mounted, longitudinally mobile, swiveling, rotating, and height-adjustable display holder with expanded working range. Note: If a Large Display is selected, the Artis basic configuration includes a connection kit for the large display instead of the displays for the examination room.
1	Large Display video controller 24 Large Display Video Controller 24 is the largest of three different video controller sizes. A maximum of 24 video signals can be connected and 21 displayed simultaneously on the Large Display. The Large Display video controller 24 receives various internal and external video signals for presentation to scale on the Large Display. Up to 24 external and internal video sources can be connected (max. 18 DVI-D and 6 analog (VGA) channels). In total, 21 video signals can be displayed simultaneously.
1	Quad HD to Full HD video controller The quad HD video signal of the Large Display with a resolution of 3840x2160 is converted to the common full HD video standard in this video standard converter (resolution 1920x1080). This signal then can be used for all common full HD video components. Optical video isolation is part of the downscaler.
1	Add 19" display for LD (rear mount) Monochrome 19" display including 36 m cable with DVI-D connection and transceiver for display installation on the rear of the DCS in combination with the Large Display.
1	Sec. operation in the control room Interface for connecting the additional system control from the control room. Rail profile for hanging control modules (e.g. the table module) in the control room. Safety button for switching off all system functions from the control room.
1	Secondary Hand Switch Ctrl (C Room) Additional hand switch for radiation release and additional control functions.

Qty	Item Description
1	Secondary Footswitch Ctrl (C Room) Additional footswitch for radiation release including configurable control functions
1	Injector conn. in the control room Interface for controlling the contrast medium injector in the control room. Injectors can be offered by Siemens Healthcare Accessory Solutions
1	Head-end operation w/ trolley Mobile trolley with accessory rails and 4.5 m cable for individual head-end positioning of the control modules.
1	Arm holder (pair) Two arm holders for comfortable lateral arm positioning along the patient's body.
1	Wide tabletop with thin mattress Patient positioning tabletop made of carbon fiber in wide, straight design for interventional, radiological examinations. The tabletop is straight all the way to the head area. Matching the wide patient positioning tabletop, special-foam mattress, 4 cm, made of open-pore polyurethane material and a latex-free cover.
1	Mattress for Tabletop, Wide Matching, special-foam mattress, 8 cm, made of open-pore polyurethane material. Mattress including cover.
1	Narrow mattress Matching, special-foam mattress, 8 cm, made of open-pore polyurethane material. Mattress including cover.
1	Head module Table insert with attached accessory rails for installing control modules at the head end of the wide tabletop.
1	Acc. rail module, narrow tabletop Table insert with attached accessory rails for installing control modules in the 'abdominal' part of the narrow tabletop. - not compatible with MediGuide Technology
1	Acc. rail module, wide tabletop Table insert with attached accessory rails for installing control modules in the 'abdominal' part of the wide tabletop. - not compatible with MediGuide Technology
1	Head-end holder The head-end holder can be attached at the head end of narrow tabletops. This is a special accessory rail holder enabling incorporation of the head supports, shoulder supports and articulated armrests, and the anesthetic curtain.
1	Body strap set The body belt protection set consists of two belts with Velcro strap. They are used for general fixation and compression and are laid around patient and tabletop.
1	Handle Hand grip for patient safety and easier patient positioning. The hand grip is used for examinations where the patient positioning tabletop is tilted more than 10 degrees. Being able to hold on to the grip gives the patient a feeling of security, and makes patient positioning easier. The hand grip is attached directly to the patient positioning tabletop by means of clamping bolts. Grip height: 10 cm, weight: 0.5 kg.
1	VA kit Artis Q/Q.zen systems Second set of system documentation (operator manual, etc.)
1	Infusion bottle holder Stainless steel infusion bottle holder with handle bar and 4 retaining rings. For securing on the accessory rail.

Qty	Item Description
1	AX ELEVATE #R Buy Back (dTA/dTC) AX Elevate program for AXIOM Artis systems (monoplane, ceiling-mounted) with flat detectors that will be replaced by a new Artis Q or Artis Q.zen system.
1	Initial onsite training 32 hrs Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	Follow-up training 32 hrs Up to (32) hours of follow-up on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	Follow-up training 12 hrs Up to (12) hours of follow-up on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	Offset Initial Training 32 hrs
1	Mark 7 Arterion, Table Mount Injector The Arterion Mark 7 Table contrast medium injector allows for the remote installation of the system power supply and installation of the injector head onto a table bracket. The injector system includes: Power supply and injector head with corresponding cabling An adjustable height table bracket for the injector head A desk mounted user control console with large touch screen Functions Pressure limitation: for 150 ml syringes 689 to 8273 kPa, corresponds to 100 to 1200 psi. . Flow rates for 150 ml syringes: 0.1 to 45 ml/s in increments of 0.1 ml/s 0.1 to 59.9 ml/min in increments of 0.1 ml/min rise/fall: 0 to 9.9 s in increments of 0.1 seconds Release delay for injection or radiation: 0 to 99.9 s in increments of 0.1 s. Adjustable volume for 150 ml syringes: 1 ml to the max. syringe capacity in increments of 1 ml. Fill rate: Variable syringe filling speed 1-20ml/s. Injection protocols: Up to 40 injection protocols possible. Parameters currently displayed on the touch screen display and on the head display: Injection speed Injection volume Remaining volume Injection duration Applied pressure Contrast medium heating: Nominal 35°C (95°F)+-5°C (9°F) Injection data memory Up to 50 injection data items stored Included in the scope of delivery Injector standard configuration 150 ml SIEMENS interface cable Operator Manual Service manual (English). Power supply 200 V to 250 V; 50/60 Hz.
1	PEDESTAL FOR INJECTOR HEAD,MARK V PROVIS
1	Eaton Powerware 9355 15 kVA UPS Includes UPS, battery, maintenance bypass panel, and one year on-site parts and labor coverage (24x7) by Eaton Powerware. This UPS is recommended when protection and uninterruptible power is required for the Artis' C-arm and table. Emergency fluoroscopy is not available with this UPS. If emergency fluoroscopy is required, the 9390 - 160 kVA UPS is recommended for the full system. One UPS per lab. Additional seismic brackets are required to make this system OSHPD approved.
1	Powerware 9155 Seismic Kit
1	9355 Output Transf Cabinet Siesmic kit
1	Blue anti-fatigue floor mat for hospital

Qty	Item Description
1	<p>Vitalinq Model 94A-07</p> <p>Vitalinq Model 94A-07 Communication System A combination intercom and music system designed for the active acoustic environments typical of catheterization, electrophysiology and vascular and interventional radiology labs. The Vitalinq system will include: 1 - 94A-07 Communication Console 1 - monitor microphone 1 - desk microphone 1 - corded headset 1 - headset foot switch 4 - stereo speakers 2 - communication speakers Operations and Owner's Manual All cables necessary to complete installation Installation guidance and 24/7 customer support via an 800 telephone number All equipment is designed in a modular manner and connected by supplied standard ethernet cables which have pre-installed connectors. This allows for quick and easy installation, or if necessary over the life of the system, component replacement. Customer or end user shall be responsible for use and maintenance. Installation and on-site service is not included.</p>
1	<p>Vitalinq MC-07 Console Extender</p> <p>Vitalinq MC-07 Console Extender A device which connects to the Vitalinq 94A-07 that can be located away from the 94A-07 console (such as in another room) and to which an additional headset and/or desk microphone can be connected for two-way communication with the procedure room.</p>
1	<p>Vitalinq wireless headset</p> <p>Wireless Headset A high quality wireless headset with adaptor cord which can be used in lieu of a corded headset with either the Vitalinq 94A-07 console or the Vitalinq MC-07 Console Extender.</p>
1	<p>Bloxr XPF Starter Kit</p> <p>The starter kit includes (2) aprons - medium, (2) thyroid collars - medium and (2) caps - medium. Color - pewter gray. XPF Technology: Provides 0.5 mm lead protection Durable and Flexible - Can be bent, folded and flexed without cracking or leaking radiation. Easy to clean - Machine wash or wipe down. Greener - Uses no toxic materials or heavy metals.</p>
1	<p>Standard Rigging zee SP</p>

One complimentary biomedical tuition is included with the purchase of this system. This training must be completed before the end of the warranty period.

Additional Rigging/Out of Scope Inbound

Additional Rigging/Out of Scope Outbound

Offset Part #14434137 VA kit Artis Q/Q.zen systems

Qty**Item Description**

1

ACUSON Freestyle Mainframe

The ACUSON Freestyle(tm) ultrasound system* is the world's first ultrasound system that operates with wireless transducers, a breakthrough in ultrasound imaging. The system features superior image quality and a new standard in ease of use in an ergonomic and portable design. Standard features include: - B-mode - Color flow mapping - Spatial compounding - Speckle reduction - Auto image optimization - Supports wireless transducers - One (1) transducer cable adapter - Two (2) batteries for wireless transducers - DICOM Storage, Storage Commitment, Modality Worklist and Echo - DICOM networking: Ethernet (wired) and 802.11b/g (wireless) - Factory default and user customizable exam types - High resolution flat panel display - A/C and battery operation - Two (2) charger bays for wireless transducer batteries *Product pending shipment confirmation

1

Freestyle 3.0 Software

ACUSON Freestyle(tm) ultrasound system product-specific operating software. Product pending shipment confirmation.

1

Freestyle Lang Kit English

English operating instructions for the ACUSON Freestyle(tm) ultrasound system*. *Product pending shipment confirmation.

1

Freestyle Cordset North America

Custom power cordset for use with the ACUSON Freestyle(tm) ultrasound system in the North America. Product pending shipment confirmation.

1

L13-5 Transducer, Freestyle

Linear wireless transducer 13-5 MHz. Includes one transducer battery. Product pending shipment confirmation.

1

C5-2 Transducer, Freestyle

Curvilinear transducer 5-2 MHz. Includes one transducer battery. Product pending shipment confirmation.

1

L8-3 Transducer, Freestyle

Linear wireless transducer 8-3 MHz. Includes one transducer battery. Product pending shipment confirmation.

1

Freestyle GCX Roll Stand

ACUSON Freestyle(tm) ultrasound system GCX roll stand allows for easy maneuverability and ergonomic positioning. Quick-release, tilt-adjustable system mount and storage baskets. Product pending shipment confirmation.

Qty	Item Description
1	Freestyle Keyboard USB keyboard designed for medical environments. Easy-to-clean and disinfect. Product pending shipment confirmation.
1	Freestyle Add'l Manual English English operating instructions for the ACUSON Freestyle(tm) ultrasound system. This part number is for additional purchasable copy of the manual. Product pending shipment confirmation.
1	Freestyle Service Manual CD Service Manual CD for ACUSON Freestyle(tm) ultrasound system. Product pending shipment confirmation.
1	Initial onsite trn Govt 4 hrs -FMV Up to (4) hours of on-site clinical education training for government, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	USD Ext Warrty FStyle 2nd yr
1	Offset for FStyle Ext Warranty 2nd yr
1	USD Ext Warrty FStyle 3rd yr
1	Offset for FStyle Ext Warranty 3rd yr

Incidental Services Associated with this Quotation:

One complimentary biomedical tuition is included with the purchase of this system. This training must be completed before the end of the warranty period.

Offset Part 11002343 Freestyle Add'l Manual English

Offset Part 11002375 Freestyle Service Manual CD

Qty

Item Description

1

Kyphoplasty arm rest "UNI"

armrest for patient positioning in prone position.

Detailed Technical Specifications

Description

System description:

The single plane X-ray angiography system for digital acquisitions was designed to meet the requirements of modern angiography and interventional procedures, with a focus on interventional radiology.

C-arm ceiling-mounted stand:

System cable outlet at the ceiling carriage, on the patient's left side.

- Up to 5 preprogrammed work positions and a further 50 user-defined work positions.
- One single joystick for patient angle oriented operation of C-arm and flat detector movements.
- Intelligent, computer-aided collision monitoring ICP (Intelligent Collision Protection).
- C-arm positioning 0° to the head end and variable up to 135° to the left and right side along the patient longitudinal axis.
- Double oblique projections of $\pm 100^\circ$ in orbital movements and up to 330° (+180°/-150°) in rotational movements (depending on gantry positioning and patient size).
- Variable C-arm speeds up to 25°/s.
- Variable focus-to-detector distance between 90 cm and 120 cm.
- Isocenter-floor distance 108 cm.
- Focus-isocenter distance 75 cm.

MULTISPACE.T

The stand can be positioned on the left or right of the patient or at the head end, or at any angle in between. It can be moved longitudinally to any position along the length of the patient and also has a park position at a sufficient distance from the patient.

In Focus allows the projection angle to the patient to remain unchanged when rotating the C-arm around the table.

IsoTilt allows the projection angle to the patient to remain unchanged when tilting the patient table (if the tilting function is available).

Both In Focus and IsoTilt improve the efficiency of an examination because there is no need to spend time adjusting the projection angle.

Patient table for angiographic examinations

Patient table

- Direct patient access from all sides, both through the swiveling table and large tabletop cantilever.
- Electromechanical release of table swivel at the touch of a button at the table.
- Telescopic foot with motor-driven height adjustment.
- Maximum patient weight: 250 kg. It is possible to install up to 40 kg of additional accessories, plus a further 100 kg for patient resuscitation.

Patient positioning tabletop

Patient positioning tabletop made of carbon fiber in wide, straight design for universal use. The tabletop is straight all the way to the head area.

Patient mattress

Matching, special-foam mattress, 4 cm, incl. a latex-free cover.

This visco-elastic comfort mattress reacts to temperature and has the special property of adapting to the individual

Description

body shape under the influence of body weight and heat.

Application-specific accessories

- Unilateral armrest: Carbon fiber armrest for cardiology and arm angiography to slide underneath the positioning mattress.
- Infusion bottle holder
- Instrument tray: Plastic instrument tray to be positioned at the patient table above the patient. It is swivable and height-adjustable, so that it can be positioned directly or sideways above the patient.
- Arm holder (1 pair): Two arm holders for comfortable lateral arm positioning along the patient's body.
- Additional hand switch for radiation release and additional control functions.

Operating modes

Fluoroscopy

- Digital pulsed fluoroscopy with pulse frequencies of 10 p/s, 15 p/s, and 30 p/s in 1k/12 bit matrix. Pulse rates of 0.5 - 7.5 p/s are also possible with CAREvision.
- Overlay fade: On-line overlay of the reference image onto the active fluoroscopy. This improves efficiency and safety during interventional procedures because additional information which is clinically necessary can be displayed directly in the live fluoroscopy image.

Digital acquisition technology

Digital acquisition technology with frame rates of 0.5 to 7.5 f/s in 1k/12 bit matrix and digital real-time filtration. Single image and serial acquisitions with time-controlled and manually variable frame rate. The 1k image matrix with a bit depth of 12 bits allows an excellent image contrast by using 4,096 shades of grey. Thus, the image quality meets highest expectations in angiography and fulfills all prerequisites for precise diagnostics and safe interventions.

Digital Subtraction Angiography:

Digital Subtraction Angiography with frame rates of 0.5 to 7.5 f/s, including pixel shift, remask, roadmap, peak opacification for iodine contrast (MaxOpac), and CO2 contrast (MinOpac); adding of the anatomical background (landmark) from 0 to 100%.

Includes the "Advanced Roadmap" additional function which offers the following clinical benefits:

- DSA image can be selected as a mask for Roadmap
- Zoom can be changed during Roadmap
- Catheter and vascular contrast can be changed separately

Unexpected patient movements in DSA acquisitions will deteriorate image quality. Although this can be corrected via manual pixel shift, it is still inconvenient and time consuming for the user. Auto Pixelshift solves this challenge easily maintaining optimal image alignment.

CARE package

ALARA principle

Siemens follows the ALARA principle: "As Low as Reasonably Achievable"; the CARE package (Combined Applications to Reduce Exposure) was developed based on this research and development principle to protect the examiner and the patient.

Dose saving

- CAREfilter: Intelligent control software that minimizes X-ray dose. Not only does this not have a negative impact on image quality, it can in fact improve it. During fluoroscopy and acquisition, special copper prefilters are automatically inserted into the X-ray beam depending on current X-ray transparency, which is calculated continuously. This is necessary to ensure that the optimal prefilter value is always active. This automation makes work easier for the user because the optimal filter setting need not be adjusted manually for each case.
The adaptive Cu prefiltration has five steps (0.1, 0.2, 0.3, 0.6, 0.9 mm) and is used to lower the reference air kerma and improve radiation quality by reducing the low-energy X-ray radiation.
- CAREvision: Pulsed fluoroscopy with additional, reduced pulse rates of 7.5 p/s to 0.5 p/s. Adaptation of pulse rate to the current application requirements for significant reduction of radiation exposure, especially during

Description

interventional procedures.

- CAREprofile: Radiation-free positioning of the primary and semi-transparent diaphragms by means of graphic display in the LIH (Last Image Hold). Collimator shutters and semi-transparent filters can be adjusted as a graphical overlay on the last-image-hold without any need for fluoroscopy or radiation.
- CAREposition: Radiation-free object repositioning by means of graphic display of the X-ray center beam and image edges in the LIH image. With CAREposition it is possible to reposition the object under visual control without radiation.
- In case of table movements the current position of the central beam and the image edges are superimposed on the LIH image as orientation points.
- Low dose acquisition: enables dose savings of up to 60 % during the examination. The Low Dose Acquisition protocol can be released with a separate pedal on the foot switch.

Dose monitoring

- CAREwatch: Display of the measured dose-area product and the calculated patient reference air kerma on the flat-screen display. Electronics unit with DIAMENTOR measurement chamber integrated in the collimator housing for dose acquisition.
Configurable screens on the data display and imaging system monitor:
During fluoroscopy: Reference air kerma rate.
During fluoroscopy interval: Accumulated reference air kerma or dose-area product, or percentage of the reference air kerma limit (total from fluoroscopy and acquisition).
CAREguard: Monitoring the reference air kerma. If the accumulated reference air kerma exceeds one of the three configurable limits, a warning appears on the live display and tableside on the touchscreen control. This allows ideal monitoring of the accumulated reference air kerma during the examination.
- CAREmonitor: Special model-based monitoring of the measured skin entry dose, taking into account the geometric conditions of the system (actual device angulation, table position, patient weight, patient size). It then continually displays whether the skin entry dose applied to a specific region of the patient's body exceeds a specific configurable upper limit. CAREmonitor continually calculates and displays the actual accumulated skin entry dose as a portion of this upper limit. This helps the user to detect a potential patient hazard at an early stage. The patient is therefore better protected against the damaging effects of radiation.

Dose documentation

- CAREreport: Dose information as part of the DICOM Structured Report. After each examination, the information is available in DICOM format and can be sent to a DICOM archive together with the image data, for example. Saving dose information in DICOM format also enables flexible analysis and further processing via a DICOM-capable analysis software/database.
- CARE Analytics: Standalone PC program for analyzing doses in angiography, CT, and radiological examinations. The data can be exported to statistics programs such as Microsoft Office Excel and SPSS for further analysis. CARE Analytics is available for download from the Siemens Intranet.

CLEAR package

The CLEAR package enables optimized image quality through real-time processing of the image data without increasing the radiation dose.

- CLEARpulse generates images with a higher contrast while also allowing doses to be lower. This is because it uses an anode with a larger area, operated with a higher anode rotation speed. This achieves a higher pulse power, which also reduces the tube voltage when coupled with 0.1 mm Cu prefiltration. This in turn makes it easier to eliminate the parts of the radiation spectrum which are not suitable for imaging.
- CLEARcontrol: The new histogram analysis provides a more homogeneous image impression by harmonizing over- and underexposed areas of the image. This is done fully automatically, thus eliminating any further manual user corrections through windowing.
- CLEARview: Dose-dependent filtering of the image data efficiently suppresses image noise, enabling clear, sharp images, even for low-dose acquisitions.
- CLEARvessel: Every pixel is analyzed in real time, and vessel edges are shown in high contrast without adding noise to the image.
- CLEARmotion: Fine moving structures, such as small vessels and guidewires, are detected in the image and motion artifacts are suppressed efficiently. The visibility of small moving vessels and guidewires is improved significantly during fluoroscopy.

In addition there is Dynamic Density Optimization (DDO) for on-line harmonization of native series and single images.

Description

Image generation

X-ray generator

Microprocessor-controlled high-frequency X-ray generator with automatic dose rate control.

- Power output: 100 kW at 100 kV.
- SID tracking: Automatic tube current adaptation to focus-to-detector distance.
- CAREmatic: Automatic X-ray control system for fully automatic calculation and optimization of exposure data based on fluoroscopic data.
- CLEARpulse: Provides higher image contrast using a reduced dose.
- Patient transparency monitoring.
- Tube load monitoring with indication in the live display.

The optimal X-ray parameters depend on the transparency of the patient at the current angulation, measured during fluoroscopy. These parameters are continuously calculated and updated. Test shots are no longer required. This ensures superior image quality and minimum radiation exposure for user and patient with every exposure release.

GIGALIX 125/30/40/90 - G X-ray tube assembly

Triple-focus high-performance X-ray tube assembly with unique flat emitter technology for generating extremely high tube currents of max. 250 mA in fluoroscopy and 1000 mA in acquisition. This provides very good image quality even with heavier patients or steep angulations. The focus is always quadratic and permits outstanding perceptibility of small structures with a nominal quadratic focus of 0.3/0.4/0.7. The anode has a high heat storage capacity of 5.2 MHU and the metal center tube with liquid bearing technology allows a maximum cooling power of 1520 kHU/min. This means that pauses are not required during radiation, even for lengthy procedures. The X-ray tube is almost silent, which is an additional benefit for patient and user.

as40HDR flat detector

The digital high-resolution dynamic flat detector with integrated removable grid is especially designed to fulfill the requirements of interventional imaging.

The detector features 16-bit analog-to-digital conversion, resulting in a gray scale resolution of 65,536 gray scales. This in turn improves contrast resolution in 3D imaging with syngo DynaCT.

The increased scintillator layer thickness of 750 μm results in a high DQE (Detective Quantum Efficiency) of 77%, thereby improving image quality at low radiation doses.

154 μm pixel arrays provide highest spatial resolution (3.25 LP/mm) and excellent contrast. Acquisition frame rates of up to 60 f/s are possible.

Usable input formats:

- Overview mode 30 cm x 38 cm.
- Zoom 1: 30 cm x 30 cm; diagonal 42 cm.
- Zoom 2: 22 cm x 22 cm; diagonal 32 cm.
- Zoom 3: 16 cm x 16 cm; diagonal 22 cm.
- Zoom 4: 11 cm x 11 cm; diagonal 16 cm.
- Zoom 5: 8 cm x 8 cm; diagonal 11 cm.

The flat detector is mounted on a motorized rotating turntable at the C-arm. It can be rotated by 90°, so that it can be adjusted to landscape format or portrait format. Any angle in between can be adjusted.

Motorized adjustment of the detector-patient distance.

The as40HDR flat detector offers additional operating functions directly on the detector housing, such as angulation, FD rotation (cranial/caudal, RAO/LAO), and change of the focus-detector distance.

Removable grid:

The grid can easily be removed, saving the user time in examinations not requiring a grid. For example in pediatrics, where dose reduction is especially important.

Description

Tube collimator

Compact multileaf collimator for DSA and cardiac applications with rectangular collimator and wedge-shaped filters. Includes the adaptive Cu prefiltration (CAREfilter) as well as the measurement chamber for recording the dose-area product and reference air kerma (CAREwatch).

StraightView

The flat detector and the multileaf collimator are installed on a motorized rotating turntable on the C-arm. They automatically line up with the table swivel, thus ensuring upright images of objects which are in line with the table. The flat detector and multileaf collimator can also be rotated together at any angle relative to the table, enabling upright presentation and collimation of objects which are not in line with the table.

Image processing

- Positive/negative image display, windowing, contrast/brightness control, electronic display (shutter), image shift (roaming), vertical and horizontal image inversion, magnifying glass, and zoom functions.
- Storing of single images as reference images also during fluoroscopy.
- Quantification: angle/length measurement, automatic and/or manual calibration.
- Text functions: user-definable image annotation, free annotation or by means of text components, comments line for the image, R/L display.
- Fast and direct access to all series, single images, and photo file images via MULTIMAP both in the examination room and in the control room for displaying or post-processing images.

Imaging system

Dual architecture

In order to provide highest level system availability, the imaging system consists of two independent computer systems that manage central tasks such as real-time image processing during fluoroscopy or acquisition as well as post-processing and networking functionality separately from one another. This ensures the best possible system performance and availability.

Image storage capacity

25,000 images in 1k/12 bit image matrix. This can be optionally extended to up to 100,000 images.

Image storage

DVD/CD burner

DVD drive for automatic digital image storage in the background on DVD-/CD-ROM for off-line data exchange in DICOM format.

Networking

- Network interface (1000 BaseT) with the following integrated DICOM services:
- DICOM Send: Sending of images into the DICOM network: The DICOM Send function enables fully automatic transfer of generated image data to a DICOM archive and/or a DICOM workstation. The user can perform his examinations without interruption, while the system is fully automatically transferring the images to the archive scene by scene. This is a background process, and thus does not interfere with the ongoing fluoroscopy or acquisition.
- DICOM Storage Commitment (StC): Feedback from the image archive. The DICOM StC function automatically gives feedback on whether the generated image data were successfully transferred. This provides the necessary certainty to the user before deleting the acquired images locally in the imaging system.
- DICOM-Query/Retrieve: Retrieval of archived images from a digital archive or from a workstation: Already archived image data from a previous examination can be fully retrieved and is then available for review and processing. The user can request CT or MR system images from the archive and display the data as a reference image in the examination room. There is no need for a separate workstation.
- DICOM Structured Report: All the quantification results obtained on the system as well as all dose information

Description

on the individual radiation releases can be saved in DICOM SR (enhanced SR) format and transferred to a DICOM network.

Note concerning DICOM interface(s)

The description in the DICOM Conformance Statement downloadable from the Internet is exclusively binding for the functionality of the DICOM interface(s).

Functionalities across interfaces with/between partner systems require explicit validation, since the interpretation of the interface by the partner/target system is not part of the product's responsibility.

A modification of the interface that might be required is not included in the offer; e.g. for the rare case that available configurations are not sufficient. With regard to expenses for interface configurations that might be required, the agreements on maintenance/service of the product apply.

Displays and display suspension system

Display suspension system

Ceiling-mounted, swiveling, rotating, height-adjustable display suspension system with longitudinal travel. It is fitted with two 19" high-contrast b/w displays for live and reference image display in the examination room as standard.

Displays

Live and reference display

Flat-screen displays in monochrome TFT technology with high luminance and extended viewing angle.

- Screen size: 19" (48 cm).
- Resolution: 1,280 x 1,024 (pixels).
- Guaranteed brightness for the entire service life: 400 cd/m² at a contrast ratio of 500:1.
- Flicker-free and distortion-free image display.
- Ambient light sensor for optimum adaptation of the image display to the room brightness.

19" high-contrast b/w display for live image display in the control room is included as a desktop version with a black frame.

Display of system data

Data for device and table position, dose data, and system messages are displayed in the examination and control room on both the live display and the reference display.

Operation

syngo

The intuitive syngo operating elements allow for managing the whole process from preparation of the patient to image post processing in a safe, reliable, and time efficient way.

Footswitch

A 4-button wired foot switch to release fluoroscopy, exposure, and table brake as well as a configurable additional function is included as standard.

In the examination room

For an ideal workflow, full operation capabilities for the system can be accessed directly at the patient table. These include complete system operation through modular control elements for controlling C-arm movements, the patient table, and the multileaf collimator.

syngo-based touchscreen with multi-functional joystick for operation of the imaging system, including post-processing and quantification as well as selection of the organ programs. The touchscreen is specifically configurable to individual clinical requirements.

This means that the user can operate the system on their own without having to leave the examination room if this is deemed necessary by the situation.

Description

In the control room

Standard Siemens syngo control via country-specific keyboard and mouse for all imaging system functions such as image post-processing, storing, and configuring of organ programs.

Siemens Remote Service SRS?

Prepared for Siemens Remote Service SRS™ (during warranty, then with service contract):

- Hardware and software remote diagnosis.
- System remote configuration, e.g. adding of a DICOM node.
- Early warning system ensuring system operation.

syngo Evolve for Artis Q

syngo Evolve is a service feature that is offered as a separate sales option for all systems of the Artis Q family. It is a key component of our upgrade strategy and allows you to take advantage of technological advancements.

Customer Care - the customer care solution from Siemens Healthcare

From the moment you purchase your Siemens system you will benefit from many services that are offered by "Customer Care"*. These include:

- Initial application training
- Interactive e-learning for various applications
- Free customer magazines
- Arrangements for clinical training via a global network
- Free trial licenses

You will find information on our e-learning program and further details on general "Customer Care" services on the Internet.

* The availability of "Customer Care" services may be restricted for some systems.

User Training

Siemens recognises the significant investment you are making in purchasing a new imaging system and are determined that you are able to realise the full capability of this new system. Siemens clinical applications training ensures you have every opportunity to fully utilize your new system.

Content of user training: Handover Training and Follow-up Training

- Introduction to the functions, options, and handling of the angiography system
- Instruction on the use of the angiography system together with modern, highly-developed applications

Delivery & duration of the user training varies and may be country specific so for additional information please contact your local Siemens representative.

- $\pm 15^\circ$ head up/head down positioning.
- Iso-tilt functionality for maintaining the projection during table tilt along the patient axis.
- Motorized, power-dependent table movement in longitudinal direction when the table is tilted (power-assisted control).
- Electromechanical release of table swivel at the touch of a table button.
- Max. patient weight 200 kg. It is possible to install up to 40 kg of additional accessories.

Excellent image quality from the abdomen to the feet is due to the fact that adjustable parameters such as acquisition frame rate, measuring fields, position of collimator blades and semitransparent filters are stored specifically for each table position. That way the different X-ray transparencies for abdomen, legs and feet can be compensated and a consistent, contrasty image quality offered.

Description

Just one single injection of contrast media protects the health of the patient and gives the physician an instant, subtracted image display of the peripheral blood vessels.

PERISTEPPING:

Peripheral digital stepping angiography with only a single contrast medium injection under visual control of the bolus flow.

C-arm stepping with ceiling mounted systems, table stepping with floor mounted and biplane systems.

- Position-dependent variable frame rates.
- Fully automatic exposure control.
- Automatic storage of the collimator setting for each step.

PERIVISION:

Peripheral digital stepping angiography with online subtraction display in an examination procedure with only one single contrast medium injection under visual control of the bolus flow.

- Only one single automatically acquired mask image for each individual position.
- Position-dependent variable frame rates.
- Fully automatic exposure control.

Automatic storage of the collimator setting for each step

-

Angle-triggered digital rotation angiography enables dynamic image display with 3D effect. Dynamic subtraction with optimum alignment of masking and filling, and automatic pixel shift in the entire scene.

- Rotation speed is 60°/s (Artis zeego and Artis ceiling) and 45°/s (Artis floor and Artis biplane).
- Acquisitions with frame rates in 1k matrix from 0.5 to 7.5, 10, 15, 30 f/s (standard) and 60 f/s with reduced spatial resolution can be selected,
- Angle triggering allows a reduction in dose through a reduced acquisition frame rate while at the same time achieving better image quality.

Includes DYNAVISON DR for native rotation angiography and DYNAVISON DSA for subtracted rotation angiography. Reconstruction at the syngo X Workplace is not possible with this operating mode.

Note: For biplane systems rotation angiography is available in plane A only.

The visco-elastic comfort mattress for narrow tabletop reacts to temperature and has the special property of adapting to the individual body shape under the influence of body weight and heat.

Contents:

syngo X Workplace, with syngo InSpace 3D Flash RT (including syngo iIdentify):

The functionality of the syngo X Workplace can be extended with additional software functions to suit specific user or clinical needs in angiography, surgery, and cardiology. The use of the licensed software is limited exclusively to the specific syngo X Workplace included with this configuration.

syngo X Workplace PC

The high-performance workstation is equipped with an Open GL accelerator board to support 3D applications. To exchange medical images on DICOM-compatible CD-Rs and DVDs, the system is equipped with a CD/DVD burner.

syngo X Workplace can be connected to an existing network via 1000/100/10 Mbit Ethernet.

Examination room: 19" color flat display or Artis Large Display connection kit

With this configuration, a display is delivered additionally for the examination room if an Artis Large Display was not ordered. If an Artis Large Display is ordered, the configuration includes a connection kit for the Artis Large Display instead of the 19" display.

Control room: two 19" color flat displays or Artis Cockpit connection kit

In this configuration, there are also two displays for the control room or two connection kits for an Artis Cockpit.

The Siemens 19" LCD color display features very high contrast even under very bright ambient light conditions. The Gamma curve was precisely adapted to the CIE/DICOM recommendation and is thus especially suited for gray scale display.

Description

LCD color display

- 19" (48 cm) screen size
- Resolution: 1280 x 1024 (pixels)
- Guaranteed brightness for the entire service life: 137 cd/m² at a contrast ratio of 300:1.
- Flicker-free and distortion-free image display
- Anti-glare screen

The controlled background lighting provides stable lighting throughout the entire product life cycle.

syngo X Workplace Basic User Software

The *syngo X Workplace* software features an intuitive and thus easy to learn user interface developed from prototypes tested in close cooperation with users.

Standard functions such as filming or image review, and optional clinical application software, are performed in individual processes on dedicated task cards. A number of functions and input parameters, as well as the language used, can be selected according to individual requirements.

Package comprising the following software licenses

Basic software with CD and dongle for the following functions:

- Patient Browser
- Filming
- Viewer
- System services

Patient Browser:

- Patient management.
- DICOM communication with Send, Receive, Query/Retrieve, Print.
- Reading and importing image data from CDs/DVDs.
- Module for writing DICOM CDs/DVDs for data exchange. Writing is in background mode.

Filming:

A virtual filmsheet shows a 1:1 display of the film sheets to be printed. This permits an effective preview of the filming job and the windowing of images, as well as providing a large number of evaluation functions.

Viewer:

The Viewer supports interactive 2D review, evaluation, and documentation functions. Multiple studies from the same patient can be displayed side-by-side for comparison.

- Image display: 1.024² screen matrix, configurable with up to 64 image segments.
- CINE display: Automatic or interactive dynamic presentation technique for the visualization of time and volume series.
- Synchronized viewing of multiple series.
- Measurement and annotation: Text annotation; distance, angle, circle, ROI and pixel lens, depending on information available from the acquisition system.

System services:

Microsoft Office 2003 Word, Excel, PowerPoint plus Outlook are supported (not provided!).

- Any user-selectable file, such as cardiac or angiographic acquisitions, DSA or InSpace AVI video sequences, can be burned to CD to prepare quality presentations and demos of pathologies.
- Network module: For connection to a local Ethernet (Gigabit or 100 Mbit) for communication with networked archives, printers, diagnostic and therapy workstations, and teleradiology routers.

Scope of functions

- Network stations can be configured.
- Unlimited selection of stations.

Description

3D image generation

3D rotation angiography

In 3D rotation angiography, angiographic images are acquired using a fast-rotating C-arm around the isocenter. Image data are transferred automatically to a syngo *X Workplace for time-optimized 3D image data reconstruction*.

- All parameters required for the 3D reconstruction are included in the organ program. This enables optimized image quality and easy handling, as well as the fastest possible 3D reconstruction.
- Rotation speed is up to 88°/s (Artis zeego with syngo Dyna3D HighSpeed), 60°/s (Artis ceiling), and 45°/s (Artis floor and Artis biplane).
- Acquisitions with frame rates in 1k matrix from 0.5 to 7.5, 10, 15, 30 f/s (standard) and 60 f/s with reduced spatial resolution can be selected,
- Angle triggering allows a reduction in dose through a reduced acquisition frame rate while at the same time achieving better image quality.

Note: For biplane systems rotation angiography is available in plane A only.

syngo DynaCT

syngo DynaCT is especially suited to support radiologists and neuro-radiologists during interventional procedures in the angiography suite with both endovascular and non-endovascular procedures. syngo DynaCT provides enhanced decision making during oncology procedures such as chemoembolization and RF-ablations. In neuroradiology, syngo DynaCT allows the visualization of bleeds, the ventricular system of the brain and microstent placement.

With syngo DynaCT it is possible to visualize a soft tissue difference of 10 HU (Hounsfield Units) of an object 5 mm in size, or 5 HU for an object 10 mm in size, in a Thick-MPR display (measured with a CATPHAN 16 CT phantom with the CTP 515 module). Homogeneous image quality is achieved across the entire image. As a result, critical regions such as the base of the skull can be displayed with a lot fewer artifacts.

DynaCT also offers:

- a new reconstruction algorithm optimized for fan beam geometry
- 20sDR-H 109 kV for native DynaCT e.g., for detecting bleeding
- faster 3D acquisition in 4x4 Binning mode

In conjunction with Artis zeego, as the fastest 3D protocol on the market syngo Dyna3D HighSpeed enables acquisitions to be generated in less than 3 seconds. As a result, moving organs such as the lungs can be displayed with a lot fewer artifacts.

syngo DynaPBV Body

Based on a special syngo DynaCT acquisition program with automatic processing, the blood volume is displayed color-coded. Under or oversupplied parenchymal areas in the abdomen can be displayed.

syngo DynaPBV Body provides physiological image information regarding lesions. As a result, individually differing response behavior to embolization can be better identified.

3D Image Manipulation

syngo InSpace 3D Flash RT

syngo InSpace 3D Flash RT facilitates the interactive 3D reconstruction and visualization in real time of a volume in volume rendering technique, MPR, and MIP. syngo InSpace 3D is used in particular as support in interventional radiology and neuroradiology in the angiography laboratory.

Based on dedicated acceleration hardware the primary reconstruction results are available in full diagnostic quality in the examination room within 18 seconds for high contrast images and less than one minute for soft tissue DynaCT images. Subsequent secondary reconstructions are available even faster.

The application facilitates interactive volume rendering, accelerated by a high-end 3D graphics card. It offers support for large data records of up to 1,600 images (512 x 512 matrix).

Description

In angiography, surgery, and cardiology, the three-dimensional information is used for diagnosis, planning of therapy and documentation.

Features:

- Reconstruction protocols for visualization of vessels, bones, clips and coils.
- The result of the reconstruction can be native or subtracted.
- Modification of reconstruction area to allow zoom via reconstruction.
- Visualization with shading and light source for an improved three-dimensional impression.
- Interventional volume measurement.

Image data:

- Volume data from AX, CT, MR, and PET modalities.
- Loading of two volume data sets simultaneously.
- Layouts: single (1on1), double (2 on1) and quadruple (4on1) for MPR display.
- Two displays are supported for simultaneous display of two volumes side-by-side.

Image display modes:

- VRT, Color VRT, MIP, MinIP, and MPR rendering.
- Thin slice renderings for VRT, MIP, and MinIP.
- Variable light source.
- Shading effects.

Volume editing:

- Cut planes.
- Editing of clip planes and control volumes.
- ROI punching.

Presets:

- Series-specific bookmarks, to store and retrieve volume visualization parameters.
- Global presets for series-unspecific application of volume visualization parameters.

Output:

- Radial ranges, including macro range definitions.
- 2D and 3D measurements, measurement grid, distance measurement and annotations.
- AVI format export with selectable compression format and compression ratio.
- TIFF, PNG, BMP, JPEG image export.
- Send to film sheet.

Diagnosis and treatment can be performed in one session. This offers a significant advantage thanks to the fully-integrated workflow, for example the

- Transfer of the projection angle to the C-arm stand.
- Indication whether the angulation can be achieved at the C-arm without collision with the patient or table.
- Interventional volume measurement.

InSpace 3D accessories

Includes the accessories required for 3D reconstruction and visualization:

- Plexiglas calibration phantoms
- Line phantom for image quality control
- Form filter
- 3D data link

syngo iIdentify (Dual Volume Visualization)

Enables the differentiation between two high-contrast 3D objects that have virtually the same contrast density and allows the display of one low-contrast and one high-contrast volume in one view. *syngo iIdentify* enables clear differentiation between contrast-filled vessels, bones, stents and coils. Furthermore, visualization of the anatomical

Description

structure of tumors in combination with the feeding vessels becomes possible.

syngo iPilot

The operator can show a 3D data volume, or excerpts of it, in the live fluoro image. Via a fade with the joystick the degree of visibility can be determined. The physician can perform the procedure with more confidence. No extra contrast is needed to make the vessel tree visible.

When the guidewire is visible on the live screen in the 3D reconstruction area, the physician can create and display an overlay at any time by pressing the "iPilot" button on the tableside control. This applies for any projection, zoom, SID and table position.

syngo iPilot (Enhanced Functionality)

syngo iPilot (enhanced functionality) allows overlaying the colored 3D volume with regular fluoro as well as with subtracted fluoro (Roadmap) and acquisition series on the display of the *syngo* Workplace. Thus the *syngo* iPilot information is available in parallel with the regular or subtracted fluoro or acquisition images on the live display of the acquisition system. *syngo* iPilot automatically updates all table, C-arm, zoom and SID changes. Even patient movement can be manually updated.

syngo iGuide with InSpace 3D/3D Fusion

syngo iGuide provides a menu guided intuitive 3 step approach for consistent needle results:

Step 1:

Definition and check of the needle path on a DynaCT or an external CT dataset.

Step 2:

Check of automatically proposed progression views that will be used for monitoring the needle procedure.

Step 3:

Alignment and progression of the needle under fluoro control while the planned needle path is overlaid on the live image of the acquisition system. Easy switch between the defined progression views to control the real needle position and direction.

Subsequently, a control scan can be performed using *syngo* InSpace 3D/3D Fusion. *syngo* DynaCT, CT, or MR images are accepted for the image fusion. Studies can be done with the same modality or with different modalities.

Registration Algorithms:

- easy-to-use visual alignment with 6 degrees of freedom (3x translation, 3x rotation)
- landmark based registration with convenient landmark editor for point-based registration using anatomical landmarks
- storage of transformation matrix with datasets after registration for later retrieval

Visualization Techniques:

- Side-by-side visualization of both datasets with correlated pointer and correlated scrolling with dog ears
- 2D fade in monochrome or pseudo-color with adjustable balance between the two superimposed data sets.

syngo Embolization Guidance

Based on a 3D acquisition, relevant vessels are marked and a vascular midline calculated. The ability to graphically overlay it with the current fluoroscopy image supports embolization of e.g. tumor-feeding vessels.

2D Image Manipulation

syngo Angio Package

The *syngo* Angio package enables dynamic review of DSA scenes (in subtracted or native display) and their post-processing at the *syngo* Workplace, with functions such as:

- Remasking.
- Pixelshift.
- Anatomic background.
- Opacification etc.
- Review of DYNAVISON and PERIVISION scenes

The high-speed functionality increases the image review frequency, especially of biplane and single-plane cardiac

Description

scenes, depending on the frame rate and the *syngo* Workplace hardware used.

With the current *syngo* Workplace hardware the following maximum image review frequencies of the scenes can be achieved:

Biplane (native):

- 6 f/s with a 1024² matrix
- 15 f/s with a 512² matrix

Monoplane (native):

- 15 f/s with a 1024² matrix
- 30 f/s with a 512² matrix

***syngo* iFlow**

syngo iFlow allows the visualization and analysis of the flow and perfusion in the examined organs. This information is based on the time-to-peak calculations from a routine DSA acquisition. The calculations can be shown as a color-map of the whole organ. It is also possible to calculate blood flow and perfusion in regions defined by the user, and display them as graphics. These graphics support the analysis of blood flow dynamics in the defined region.

***syngo* Scene Compare**

Dual monitor support with biplane review functionality for the post-processing of DSA scans. A monitor available separately supports the evaluation of bi-planar scans in synchronized mode and can also be used to compare scans to single images. This also enables the dynamic comparison of two scenes.

Common functions

Inroom Control

The InRoom Control software extension allows for remote control of the *syngo* Workplace from the examination room via touchscreen and joystick.

For this, another set of functions is offered on the system touchscreen for *syngo* InSpace3D and *syngo* InSpace EP (if available). These are implemented for 3D navigation and allow the user to manipulate the 3D image displayed in the examination room.

Expert-i

Expert-i enables the physician to interact with the *syngo* Workplace from virtually anywhere in the hospital.

When clinical questions arise at the *syngo* Workplace, a second user with a Windows PC can quickly and efficiently access the *syngo* Workplace via the network. He or she can assume full control of every application on the *syngo* Workplace and can see all screen content that is displayed for the local user on the main monitor. This allows the parties involved to discuss clinical questions via phone and quickly reach solutions on a joint basis.

DICOM

Industrial standard for the transmission of information between DICOM-compatible units from different manufacturers. The scope of functions is described in detail in the DICOM Conformance Statement and in the standard version includes the Transmission/ Reception, Query/ Retrieve and Basic Print functions.

Note concerning DICOM interface(s)

For diagnostic purposes, only hardcopy cameras/laser printers explicitly approved for this system may be used.

The description in the DICOM Conformance Statement downloadable from the Internet is exclusively binding for the functionality of the DICOM interface(s).

Functionalities across interfaces with/between partner systems require explicit validation, since the interpretation of the interface by the partner/target system is not part of the product's responsibility.

A modification of the interface that might be required is not included in the offer; e.g. for the rare case that available configurations are not sufficient. With regard to expenses for interface configurations that might be required, the agreements on maintenance/service of the product apply.

Linked Marker

'Linked Marker' is used to display a graphical reference overlaid on the live image marking an anatomical structure

Description

that is visible in the 3D volume or marking the pathway for a puncture to guide the needle.

The 'Linked Marker' tool places points or lines onto the 3D data set. Placement can be performed either in the MPR view or directly in the VRT view. Either all or selected graphics may be overlaid on the current live image – Fluoro, Roadmap, or Acquisition – in order to support the user during an intervention. Modifications such as e.g. moving, resizing, deleting any selected graphics are possible.

'Linked Marker' graphics may be saved with the 3D data set. That means these points and lines can be archived for later review with the 3D data.

Linked Pointer

'Linked Pointer' displays the current mouse cursor position on the 3D volume and matches the corresponding position on the live monitor.

With the 'Linked Marker' function selected, all cursor movements in the InSpace MPR view are simultaneously shown at the corresponding position in the 2D image on the live monitor.

Linked Contours

'Linked Contours' displays a graphical outline on the live monitor to indicate the shape or contour of the 3D volume displayed on the *syngo* workplace. It may be used to give the user an indication of the 3D volume on the live monitor, e.g. a stent or a coiling basket.

Selecting the function 'Linked Contour' will generate a graphical display of the outlines in the 3D volume and overlay it on to the image – Fluoro, Roadmap or Acquisition – on the live monitor.

The displayed contours are dependent on the current rendering settings (VOI, punching, windowing, transparency) of the displayed volume.

Geometrical changes (stand angulation, zoom size, SID, table positions) will automatically result in an update of the displayed graphics on the live monitor.

Fly-Through standalone featuring 'quick endo view' mode with one-click display of internal anatomy as perspective VRT image at the position indicated by reference lines in MPR images.

- Orientation control with correlation of MPR reference lines and colored beam projections in perspective VRT image.
- Interactive navigation on endoscopic view or reference segments with push/pull, fly around, look around or zoom/pan mode.
- Path creation with key frames at points of interest.
- Automatic or interactive fly mode along created path or along automatically found path.
- Possibility to store path or range of perspective VRT images.

Standard and perspective VRT settings can be modified independently and stored in VRT gallery.

Vascular evaluation for *syngo* InSpace 3D Flash, *syngo* InSpace 3D Pro, and for *syngo* InSpace Viewer:

- Automated contour detection and path planning in the vessel tree.
- Determination of degree of stenosis.
- Automatic and manual reference diameter determination.

Easy and comfortable handling enables measurement during an intervention at the examination table.

Measuring program integrated in the imaging system for objective, precise and reproducible evaluation of vessels.

- Automated contour detection.
- Determination of degree of stenosis.
- Automatic and manual reference diameter determination.
- Automatic and manual calibration methods.
- Distance and angle measurement.

The vascular analysis allows precise quantification under sterile conditions, direct at table side with the

Description

touchscreen control. This speeds up the intervention and makes the procedure safer for the patient. The reports can be easily stored in the patient folder for documentation and to show the correct analysis of dilatations etc.

Especially to be used for vessel sizes between 0.5 mm and 50 mm.

Automap optimizes the procedure workflow, especially during interventions. A selected reference image displaying the needed medical information (e.g. before dilatation) is used as the basis for moving the system to the correlated position automatically. The intervention can be continued immediately without manually repositioning the patient. On the other hand, the system is able to select a reference image for the current device position. In case of changes in device position, this enables the user to see the corresponding reference images quickly and safely.

Note concerning DICOM interface(s)

For diagnostic purposes, only hardcopy cameras/laser printers explicitly approved for this system may be used.

The description in the DICOM Conformance Statement downloadable from the Internet is exclusively binding for the functionality of the DICOM interface(s).

Functionalities across interfaces with/between partner systems require explicit validation, since the interpretation of the interface by the partner/target system is not part of the product's responsibility.

A modification of the interface that might be required is not included in the offer; e.g. for the rare case that available configurations are not sufficient.

With regard to expenses for interface configurations that might be required, the agreements on maintenance/service of the product apply.

Printing Acquisitions using a Virtual Filmsheet

Selecting "Auto-Print" automatically forwards the images stored in the virtual filmsheet to the printer. This optimizes the workflow, eliminating the need for user interaction. In addition, a specific layout can be configured on the virtual filmsheet, which the user can review and edit on the monitor at any time. As a result, printing is only required after the layout has been optimized on the monitor, saving time and costs.

Note:

For diagnostic purposes, only hardcopy cameras/laser printers explicitly approved for this system may be used.

The description in the DICOM Conformance Statement downloadable from the Internet is exclusively binding for the functionality of the DICOM interface(s).

Functionalities across interfaces with/between partner systems require explicit validation, since the interpretation of the interface by the partner/target system is not part of the product's responsibility.

A modification of the interface that might be required is not included in the offer; e.g. for the rare case that available configurations are not sufficient.

With regard to expenses for interface configurations that might be required, the agreements on maintenance/service of the product apply.

The lower body radiation protection can be attached to the accessory rails either on the right or on the left side of the patient positioning table.

It consists of the following shielding units:

- A basic unit shielding the area between accessory rails and the floor. It is flexible and can be adapted to the examiner's preferences.
- One LB radiation protection pivot swivel element that can move out of the way during collisions with the tube and still retain its protective function.
- Two clip-on units pointing upwards from the upper edge of the basic unit with a length of 57 cm and 27 cm.

The scattered radiation shielding units can be attached to the basic unit in an overlapping and fan-shaped way to allow closed, adapted scattered radiation protection even in the lower thorax area.

The maximum load of the accessory rails is 40 kg, the weight of the attached scattered radiation protection is 8 kg.

Radiation protection attached via a ceiling-mounted, mobile stand for protection against scattered radiation; incl. 4 m ceiling rail.

Description

- Swivelable and rotatable around the fixed point, range of rotation 360°.

- Counter-balanced, height-adjustable support arm.

Acrylic glass with Pb equivalent of 0.5 e.q. (w x h: 78 cm x 90 cm), with a special patient cut-out for interventional examinations.

Mach LED 3 MC OR light with focusable light system, can be positioned flexibly. Can also be installed on the Portegra2 ceiling support of the portable radiation protection panel. It is therefore fully integrated into the ceiling-installed radiation protection system of the Artis Zee VC21/Q/Zen family.

- - Luminance: 130,000 Lux for 100 cm distance
 - Working distance: 60 to 150cm
 - Color rendering index Ra: 96
 - Color temperature: 3750, 4000, 4250, 4500, 4750 Kelvin
 - Focusable spot size: 17 to 28cm
 - Diameter of light head: 57cm
 - Number of LED lights: 112
 - Total input power: 120 VA
 - Max. reach of the spring arm combination: 185 cm
 - Weight without grip sleeve: 15,2kg
- OR lamp power connection 230V or 115V possible

Color flat display

The or 60" or 56" display area allows for both large display and the free positioning of examination-relevant video signals.

The fully integrated tableside control allows for selection from among twelve layout variants.

For the diagnostic color display in TFT technology, with high luminance and extended viewing angle, the gamma curve has been adapted particularly for gray scale display according to the CIE / DICOM recommendation.

Video signals such as live, assist and reference images, *syngo* X Workplace, Sensis/recording systems, PACS, HIS/RIS, ultrasound, ECG, external video, endoscope, mapping systems, system and table position, system messages and dose information can be individually positioned and displayed on the Large Display, if connected.

The extended Roadmap function is included, if DSA is available:

- Native live fluoro image during fluoroscopy; otherwise Last Image Hold.
- Native live fluoro image during roadmap / subtracted fluoroscopy; otherwise Last Image Hold.
- Native live acquisition during DSA acquisition; otherwise native max-fill image.

If the dual reference function is available, parallel static reference images are displayed on both reference monitors.

Technical specification for the display:

- Display size (W x H) 56 " 124,4 cm x 70 cm or 60 " 133 cm x 74,8 cm
- Screen size 56" (142.2 cm). or 60 " 153 cm
- Resolution: 3840 x 2160 (pixels); 8 megapixels at 4 x HD.
- Color depth 16.7 10⁶ colors.
- guaranteed brightness for the entire service life: 300 cd/m² at a contrast ratio of 800:1.
- Flicker-free and distortion-free image display.

Bypass concept

In case of error, such as controller failure, the Large Display switches automatically to bypass mode and emergency fluoroscopy is displayed on the Large Display.

Backup concept

The Large Display has a backup concept to ensure against power supply failure (2 separate power supplies for the left and right sides of the Large Display).

Description

Display mount

The longitudinally mobile, swiveling, rotating, and height adjustable display holder with expanded working range contains a large 56" color flat display.

All cables are integrated.

The double-articulated arm of the "extended working range" display holder provides greater flexibility and a greater positioning range for the Large Display.

Technical data for the display holder:

- Longitudinal travel range 315 cm.
- Height adjustment range 75 cm.
- Swivel range between the articulated joint and the suspension at the ceiling-mounted carriage ± 150 degrees.
- Swivel range between the freely-suspended cantilever arm and the articulated joint ± 120 degrees.
- Display swivel range 330° .

The Large Display video controller 24 receives various internal and external video signals for presentation to scale on the Large Display.

Up to 24 external and internal video sources can be connected (max. 18 DVI-D and 6 analog (VGA) channels). In total, 21 video signals can be displayed simultaneously.

Important images for diagnostic purposes can be displayed to scale in their original size on the Large Display. Less important, non-diagnostic information can be displayed at a reduced size by the interpolation algorithm for image information integrated in the video controller.

An enlarged or reduced display can be selected individually via the display configurations at the fully integrated tableside control. The video controller then takes over interpolation and adaptation of image size.

The Display is attached to the rear of the DCS Large Display.

Mounting brackets are already available.

Flat display in monochrome TFT technology with high luminance and extended viewing angle.

- Screen size 19" (48 cm).
- Resolution 1280 x 1024 (pixels).
- Maximum brightness 1000 cd/m².
- Guaranteed brightness for the entire service life: 400 cd/m² at a contrast ratio of 500:1.
- Viewing angle (horizontal and vertical) 170 degrees.
- Flicker-free and distortion-free image display.

Ambient light sensor for optimum adaptation of the image display to the room brightness.

Rail profile (short table attachment) for table operation

- Weight: 1.4 kg
- Rail length: 12 cm
- Width: 20 cm
- Height: 14.5 cm

Rail profile (long table attachment) for device operation (with or without table operation)

- Weight: 2.8 kg
- Rail length: 25 cm
- Width: 20 cm
- Height: 14.5 cm

For Artis tabletops, the two arm holders help to laterally position the arms comfortably along the patient's body. They are slid laterally underneath the mattress, level with arms, and fixed by the patient's body weight.

The patient's arms can be immobilized with commercially available securing straps (not included). Two pairs of arm holders of different length and height (matching the mattress height) are supplied, that are suitable both for thick and thin mattresses.

Description

An arm holder weighs 8 kg.

Ordering information that can be deleted from the final version of the offer follows:

Not in conjunction with the Surgery table and multi-section metal / carbon tabletop or the multi-section Surgery metal / carbon tabletop RoW.

Already included in the following basic configurations:

- Combination Interventional cardiology / radiology
- Interventional radiology
- Neuroradiology
- Combination Interventional radiology / cardiology
- Vascular surgery
- Neurosurgery

Can also be ordered as an option.

The visco-elastic comfort mattress reacts to temperature and has the special property of adapting to the individual body shape under the influence of body weight and heat.

This visco-elastic comfort mattress for tabletop wide, reacting to temperature, has the special property of adapting to the individual body shape under the influence of body weight and heat.

This visco-elastic comfort mattress for tabletop narrow, reacting to temperature, has the special property of adapting to the individual body shape under the influence of body weight and heat.

The insert with accessory rails attached to the right, left, and head end slides over the outer edges of the patient positioning tabletop.

It is locked in place through two screws on either side. The part to be inserted underneath the tabletop consists of radiolucent carbon fiber material, which avoids disturbing edges in the image.

Max. load capacity of the accessory rails: 40 kg.

Length of the accessory rails: 45 cm.

Ordering information that can be deleted from the final version of the offer follows:

For wide tabletops.

Delivered as an option only, not included in the basic configuration.

Not in conjunction with the Surgery table.

The insert with accessory rails attached to the right and left slides over the outer edges of the patient positioning tabletop.

It is locked in place through two screws on either side. The part to be inserted underneath the tabletop consists of radiolucent carbon fiber material, which avoids disturbing edges in the image.

Max. load capacity of the accessory rails: 40 kg.

Length of the accessory rails: 47 cm.

Ordering information that can be deleted from the final version of the offer follows:

For narrow tabletops.

Not to be used in conjunction with head holder.

Not in conjunction with the Surgery table.

Delivered as an option only, not included in the basic configuration.

The insert with accessory rails attached to the right and left slides over the outer edges of the patient positioning tabletop.

It is locked in place through two screws on either side. The part to be inserted underneath the tabletop consists of radiolucent carbon fiber material, which avoids disturbing edges in the image.

Max. load capacity of the accessory rails: 40 kg.

Length of the accessory rails: 45 cm.

Description

Ordering information that can be deleted from the final version of the offer follows:

For wide tabletops.

Delivered as an option only, not included in the basic configuration.

Not in conjunction with the Surgery table.

Ordering information that can be deleted from the final version of the offer follows:

Not in conjunction with the multi-section Surgery metal / carbon tabletop or the multi-section Surgery metal / carbon tabletop RoW.

Delivered as an option only, not included in the basic configuration.

Ordering information that can be deleted from the final version of the offer follows:

Not in conjunction with the Surgery table.

Delivered as an option only, not included in the basic configuration.

The infusion bottle holder serves for attaching a maximum of 4 infusion bottles directly at the accessory rail of the patient positioning table.

- No obstruction due to additional stands in the room.
- Safe administration of infusions even with the table moving or tilting.

Ordering information that can be deleted from the final version of the offer follows:

Not in conjunction with the Surgery carbon tabletop.

Already included in the basic configuration.

Can also be ordered as an option.

AX Elevate is the Siemens managed system upgrade program, which helps you replace your existing system with a new one, allowing you to benefit from modern technologies and functionalities. The old system will be bought back by Siemens.

The Arterion Mark 7 Table contrast medium injector allows for the remote installation of the system power supply and installation of the injector head onto a table bracket.

The injector system includes:

- Power supply and injector head with corresponding cabling
- An adjustable height table bracket for the injector head
- A desk mounted user control console with large touch screen

Functions

Pressure limitation:

- for 150 ml syringes 689 to 8273 kPa,
corresponds to 100 to 1200 psi. .

Flow rates for 150 ml syringes:

- 0.1 to 45 ml/s in increments of 0.1 ml/s
- 0.1 to 59.9 ml/min in increments of 0.1 ml/min
- rise/fall: 0 to 9.9 s in increments of 0.1 seconds

Release delay for injection or radiation:

- 0 to 99.9 s in increments of 0.1 s.

Adjustable volume for 150 ml syringes:

- 1 ml to the max. syringe capacity in increments of 1 ml.

Description

Fill rate:

- Variable syringe filling speed 1-20ml/s.

Injection protocols:

- Up to 40 injection protocols possible.

Parameters currently displayed on the touch screen display and on the head display:

- Injection speed
- Injection volume
- Remaining volume
- Injection duration
- Applied pressure

Contrast medium heating:

- Nominal 35°C (95°F)+-5°C (9°F)

Injection data memory

- Up to 50 injection data items stored

Included in the scope of delivery

- Injector standard configuration 150 ml
- SIEMENS interface cable
- Operator Manual
- Service manual (English).

Power supply

200 V to 250 V; 50/60 Hz.

This UPS is recommended when protection and uninterruptible power is required for the C-arm and table. Emergency fluoroscopy is not available with this UPS. If emergency fluoroscopy is required, the 9390 - 160 kVA UPS is recommended for the full system. One UPS per lab.

Operation:

- Since this UPS is working completely uninterrupted, a power failure is observed when no radiation is available and the display shows "No X-ray please wait".
- The Emergency power lamp (red) will light on the power display during a power failure. All stand movements are possible and the image system functions are protected against data loss. Guaranteed back up time: 10 min.
- Restoring of hospital's main power supply is indicated when the generator boots again (also green Hospital power lamp lights). Full exposures are available after apx. 75 seconds.

Includes UPS, battery, maintenance bypass panel, and one year on-site parts and labor coverage (24x7) by Eaton Powerware.

Additional seismic brackets are required to make this system OSHPD approved.

The Powerware 9155 UPS Seismic Kit protects the UPS and Extended Battery Modules (EBMs) through Zone 4 seismic activity, based on NEBS GR-63-CORE Seismic Zone 4 Testing.

NT60010835 Interstate Mat Corporation Anti-fatigue Mat

Industrial-grade anti-fatigue floor mat that provides comfort and durability. As a high-quality product designed to fight fatigue, it provides support for tired, aching feet, legs and back. Beveled edges for safety. Size 3'x5'.

Description
<p>This support makes it possible to position the patient's arm comfortably in various positions underneath the tabletop, e.g. in the elbow position at an angle of 90° parallel or transversally to the wide tabletop. The positioning of the arms can be adjusted according to the arm length und thickness with an additional included pad for the armrest.</p> <p>The armrest is attached to the tabletop under the mattress without the need for an additional attachment.</p> <p><i>Ordering information that can be deleted from the final version of the offer follows: The armrest for vertebroplasty and kyphoplasty can be used with the wide Artis tabletop. Delivered as an option only, not included in the basic configuration. Not in conjunction with the Surgery table.</i></p>

ACUSON Freestyle ultrasound system

Description

Standard features include:

- B-mode
- Color flow mapping
- Spatial compounding
- Speckle reduction
- Auto image optimization
- Supports wireless transducers
- One (1) transducer cable adapter
- Two (2) batteries for wireless transducers
- DICOM Storage, Storage Commitment, Modality Worklist and Echo
- DICOM networking: Ethernet (wired) and 802.11b/g (wireless)
- Factory default and user customizable exam types
- High resolution flat panel display
- A/C and battery operation
- Two (2) charger bays for wireless transducer batteries

Complete user instructions detailing step-by-step operations of the ACUSON Freestyle™ ultrasound system. Includes printed Manual and electronic version in English, French, Italian, German, Spanish and Swedish.

Suggested applications for use include: Abdominal, Breast, GYN, MSK, Neonatal, OB, Pediatrics, Small Parts, Thyroid, and Vascular.

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