

SUPPLY WAREHOUSE B70038
V.A. Medical Center
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SAN ANTONIO, TX 78229-4404
P.O.# 671-B70038

Qty

Item Description

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Biograph mCT Flow Edge

The Biograph mCT Flow Edge with FlowMotion Technology is a whole-body PET•CT tomograph designed for the purposes of oncological, neurological and cardiac imaging and diagnosis. With a single noninvasive procedure, the Biograph produces remarkable CT and PET•CT images that reveal highly-detailed anatomy and biological processes at the molecular level.

The Biograph mCT Flow provides:

- high performance spiral computed tomography (CT) imaging and applications.
- high-resolution, high-count rate, PET imaging of metabolic and physiologic processes.
- high quality anatomic and metabolic image registration for optimal lesion detection and identification within the body.
- high quality attenuation correction and scatter correction for PET imaging.

1

TrueV PET - mCT Flow

The Biograph mCT Flow TrueV option provides improved PET productivity and performance by extending the axial PET coverage to 22.1 cm.

1

RTP Pallet

RTP Flat pallet for Biograph mCT. The carbon fiber table top utilizes a quick release latch for easy on/off.

Varian Exact(tm) compatible indexing for accessories.

Includes quantity 1 two-pin locator bar.

1

Cardiac PET/CT Option

Provides both HeartView CT as well as PET cardiac gating acquisition/reconstruction. Allows for the ability to automatically match gate definition between CT and PET during reconstruction for phase match attenuation correction and visualization.

1

PET Dynamic Option (AWP)

Support for list mode acquisition, offline histogramming and reconstruction. Support for retrospective histogramming in any arbitrary frame durations of 3 second or greater, maximum of 100 frames defined by available disk space. Whole body (multi-bed) dynamic support of up to 25 passes. Dynamic Speed feature supports online processing capabilities for list mode imaging allowing reconstruction of dynamic frames from list mode data while acquisition is ongoing.

Qty	Item Description
1	<p>ECG monitoring module (UPMM-2)</p> <p>Universal Physiological Monitoring Module (UPMM) provides patient cardiac ECG information for either CT or PET cardiac gating. Locates in the patient handling system for convenient patient connection. Includes patient cable.</p>
1	<p>PET/CT Resp Gating Opt</p> <p>Provides both CT Respiratory and Triggering option as well as PET respiratory gated acquisition/reconstruction. Allows for the ability to automatically match gate definition between CT and PET during reconstruction for phase match attenuation correction and visualization.</p>
1	<p>Anzai Respiratory Interface</p> <p>Configuration for connecting Anzai respiratory trigger system to the Biograph.</p>
1	<p>ultraHD-PET Option (AWP)</p> <p>Utilizing timing information (time-of-flight) between the two PET coincidence events, coupled with resolution recovery of HD•PET, ultraHD•PET option provides improved image signal-to-noise which can be used to either enhance image quality and/or reduce patient acquisition time. The Biograph ultraHD•PET option takes PET imaging to the pinnacle of performance.</p>
1	<p>iMAR (AWP)</p> <p>The iMAR metal artifact reduction algorithm combines three successful approaches (beam hardening correction, normalized sinogram inpainting and frequency split). This allows to reduce metal artifacts caused by metal implants such as coils, metal screws and plates, dental fillings or implants.</p> <p>iMAR is compatible with extended FoV, the extended CT scale as well as the newest dose reduction feature.</p> <p>Along with the new algorithm comes the simple user interface of iMAR enabling easy reconstruction of clinical images with reduced metal artifacts.</p>
1	<p>PET Gantry UPS - mCT</p> <p>Uninterruptible Power Supply (UPS) option providing 5 minutes of backup power enabling proper shutdown of the PET system in the event of power loss. Specifications: 5.0 KVA, 230 Volts, 50/60 Hz.</p>
1	<p>Patient gantry call button</p> <p>Pneumatic bulb call button allows patient's with vocal difficulties to signal the operator. Provides light and audio signal at the operator's console when the squeeze bulb is activated. Pneumatic design avoids electrical wire artefacts.</p>
1	<p>Keyboard, English</p> <p>Keyboard in the above-mentioned language.</p>
1	<p>Computer Desk</p> <p>New CT desk to accommodate the control components and color monitor.</p> <p>Width: 1200 mm, Depth: 800 mm, Height: 720 mm.</p>
1	<p>Computer Cabinet</p> <p>New cabinet to accommodate the computer system and UPS. Matched to the design of the control console table.</p> <p>Width: 800 mm, Depth: 800 mm, Height: 720 mm</p>

Qty	Item Description
1	BiographOn-site NEMA testing Class standard testing NU2-2012 tests are offered as follows for PET/CT.
1	Biograph Ge-68 Sources Calibration sources for the Biograph mCT. These sources are to be purchased with a new Biograph mCT scanner.
1	Biogr. Uni. Phantom Shield-Fixed Contains shield for the Biograph TrueV Uniform Phantom.
1	Install Kit with PDU Items necessary for install. Includes power distribution unit for connecting entire system to a single 3-phase power drop.
1	Installation US
1	Water Filter Kit mCT Water filtration hardware kit required when connecting Biograph mCT/mCT Flow system to facility chilled water.
1	Additional System Manuals Additional user manual for the above selected MI 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	CT Cross Trainer The CT CrossTrainer Program is a printed self-study course provided and administered by MIC and is intended for (1) imaging professional. StudyModules(tm) present CT in an easy to learn, interactive format with a comprehensive scope including physical principles, hardware and software, image parameters selection, image formation, safety, contrast administration, artifact prevention, patient handling, routine and advanced imaging techniques, and an abundance of images and illustrations. - Target audience: Any technologist seeking to learn CT imaging. Prior CT experience is not required. - Specs: 6 StudyModules, 15 hours of study time, 17 Cat A CE credits - Time limited: A 6 month term of enrollment provides an opportunity to earn the associated CE credits starting on the date the course materials are shipped. Upon expiration of enrollment, unearned credits are forfeited 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	GOV'T ONLY - MI PET Training Class Tuition for (1) government attendee to attend a classroom course of choice at one of the Siemens training centers. 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.

Qty	Item Description
1	<p>MI PET Project Management</p> <p>A Siemens Project Manager (PM) will be the single point of contact for the implementation of your Siemens equipment. The assigned PM will work with the customer's facilities management, architect or building contractor to assist you in ensuring that your site is ready for installation. Your PM will provide initial and final drawings and will coordinate the scheduling of the equipment, installation, and rigging, as well as the initiation of on-site clinical education.</p>
1	<p>PET Gating Onsite Training 16 Hrs</p> <p>Up to (16) hours of on-site gating 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 if applicable. 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.</p>
1	<p>Project Mgmt/Site Planning (US only)</p>
1	<p>NEMA_XR-29 Standard</p> <p>This system is in compliance with NEMA XR-29 Standard Attributes on CT Equipment Related To Dose Optimization and Management, also know as Smart Dose</p>
1	<p>Low Contrast CT Phantom & Holder</p>
1	<p>Stellant D Dual Ceiling w/Certegra WS</p> <p>Stellant D Dual Ceiling mounted with Certegra Workstation NO Informatics. Short ceiling post - 580 mm.</p> <p>Other ceiling post lengths are available (different part numbers): 850 mm and 1000 mm.</p> <p>Includes Stellant D, Dual Head, ceiling mounted injector; Certegra workstation; installation and warranty through Medrad.</p>
1	<p>Medrad P3T 2.0 Bundle</p> <p>P3T 2.0 Bundle containing all PT3 Modules for the Certegra Workstation.</p> <p>Includes Medrad's P3T Cardiac, Abdomen and PA</p>
1	<p>Anzai Respiratory Gating (VI)</p> <p>With the Respiratory Gating system, the respiratory data is synchronized with the CT acquisition in order to minimize motion artifacts. The system is comprised of load cell with breast belt and a PC based evaluation console that is connected to the CT system, for capture and storage of a signal representing the patient's respiratory cycle. All components can be placed on a trolley for mobile positioning in the examination room. This Respiratory Gating hardware only works together with the respiratory gating software option integrated in the CT system.</p>
1	<p>Mercury VNA 2.7TB</p> <p>No limitations on the number of Remote AE Titles. Advanced rule-based and automated study/image routing, pre and post fetching and image management . Includes 1 year Next Business Day (NBD) on-site service for hardware and 1 year software warranty including software updates.</p>
1	<p>Mercury VNA DR 2.7TB</p> <p>Integrated RAID 5 Storage with hot-spare with easy expansion to hundreds of terabytes. Includes DICOM-compliant software featuring 1 Local AE Titles and 1 Remote AE Title. Includes 1 year Next Business Day (NBD) on-site service for hardware and 1 year software warranty including software updates.</p>
1	<p>GOV'T - ONLY - Projectmanagement Offset</p>

System Total:

Incidental Services for Biograph mCT Flow Edge on Quote Nr. 1-MGYX4F Rev. 2

GE Discovery VCT, Project No. 2017-0302, deinstall date March 2019, valid through March 31, 2019

Additional Rigging NMSYS

One complimentary biomedical tuition is included with the purchase of this system.

Offset Part 14422287 Additional System Manuals

Initial onsite training 32 hrsGov Offset

Net Total of Incidental Services:

Net Total of System including Incidental Services:

OPTIONS for Biograph mCT Flow Edge

All items listed below are **OPTIONS** and will be included on this system **ONLY** if initialed: (See Detailed Technical Specifications at end of Proposal.)

Qty	Item Description
1	Cardio BestPhase Plus (AWP) Cardio BestPhase, a software dedicated to automatically detect the optimal phase for motion-less coronary visualization. The phase is defined in either end-systole, end-diastole or both timepoints and automatically reconstructed.
1	HD-Chest #AWP Adaptive respiratory gating for automated optimal, motion-freeze, providing improved image quality by reducing respiratory motion artifacts while providing optimized count statistics.
1	Multi-series CT AC (AWP) Multi-series CT AC provides ability to merge multiple CT acquisitions/reconstructions into a single CT series for use during PET attenuation correction. Avoids the need to perform a separate PET attenuation correction CT exam when performing multiple CT acquisitions optimized for various regions in the body.
1	SMART Neuro AC (AWP) Calculated attenuation correction for brain imaging reduces the need for CT imaging for attenuation correction while providing images with quantitative units.
1	CT Dual Energy Scan (AWP) The syngo Dual Energy Scan for Single Source option offers the possibility to acquire two spiral data sets in sequence at different energies. The results are two data sets with diverse information.
1	TwinBeam Dual Energy (AWP) New Benchmark in Single Source Dual Energy. TwinBeam Dual Energy enables the simultaneous acquisition of high and low kV datasets in a single CT scan.
1	FAST DE Results (AWP) With FAST DE Results you can select Dual Energy applications at the AWP and the results will be sent directly to the PACS for a straight forward Dual Energy workflow.
1	CT FAST IRS Reconstruction computer for the preprocessing and reconstruction of the CT raw data. The reconstruction computer contains a cluster of high-performance GPU boards performing the preprocessing and reconstruction of the CT data. The peak reconstruction performance is up to 60 frames/sec.
1	Cooling System Water/Air Water-to-air heat exchanger for the dissipation of heat loss generated in the gantry to the outside air. System operating temperature: 20 - 26 degrees C, 20 - 75 % rel. humidity (not condensing). Ideal for installation far from the scan room. Cooling system contains to units, water/water exchanger close to the scan room and an additional remote water/air exchanger. Maximum distance between water/water unit and remote water/air exchanger up to 40 meters enabled by thin diameter of water transferring pipes.
1	Cooling System US Install Kit Kit for installation of the Cooling System Water/Air in US Includes:

Detailed Technical Specifications

Description

Biograph mCT Flow Edge consists of the following:

Scanning Unit (Integrated PET•CT Gantry)

The fully integrated PET•CT gantry incorporates CT and PET detector assemblies and electronics in an efficient, compact design that reduces data transmission noise and increases system reliability. The large gantry opening, continuous patient port and short tunnel length provide ease of positioning for up to 500 lb (227 kg) patients and help to minimize patient claustrophobia. Quad operator controls on gantry for positioning from either side of patient from either the front or rear. Dual gantry displays (front and rear) for system status.

CT System

The CT imaging capability of the Biograph mCT consists of a 128-slice CT based on the Definition Edge CT platform featuring a full range of spiral CT clinical applications with high performance.

Gantry:

Aperture: 78 cm; power supplied via low-voltage slipring.

Rotational speed of the gantry: 214 rpm with a rotation time of 280 ms.

Scanning system:

Adaptive Array Detector (AAD) system based on UFC™ (ultrafast ceramics) with up to 47104 elements depending on configuration, and 1472 measuring channels per slice (the measuring system can contain replacement components).

STRATON tube high-performance X-ray system:

The STRATON tube provides direct oil cooling of the anode with the ball bearings located outside the vacuum. The direct anode cooling and the small and compact design of the anode eliminates the need for heat storage capacity (equivalent of 50 MHU) and enables an unprecedented cooling rate of 7.3 MHU/min. Therefore cooling delays between multiple long range scans are eliminated, even for large patients. Tube current range: 20-800 mA. Focal spot size according to IEC 60336: 0.7 x 0.7mm/7°, 0.9 x 1.1mm/7°. Computer controlled monitoring of anode temperature, multifan principle with flying focal spot.

Z-Sharp technology:

The unique STRATON X-ray tube utilizes an electron beam that is accurately and rapidly deflected, creating two precise focal spots alternating 4,608 times per second. This doubles the X-ray projections reaching each detector element. The two overlapping projections result in an oversampling in z-direction, known as Double z-Sampling. The resulting measurements interleave half a detector slice width, doubling the scan information without a corresponding increase in dose. Siemens' proprietary, high-speed Ultra Fast Ceramic (UFC) detector enables a virtually simultaneous readout of two projections for each detector element - 2 x 64 slices for every viewing angle - resulting in a full 128-slice acquisition.

100 kW X-ray generator:

Microprocessor-controlled, low-noise high-frequency generator with integrated, automatic self-testing system for continuous monitoring of operation. Settings: High-voltage range 70, 80, 100, 120 and 140 kV; power max. 100 kW, adjustable in fine steps.

SAFIRE reconstruction:

The Sinogram Affirmed Iterative Reconstruction (SAFIRE) enhances spatial resolution, reduces image noise and increases sharpness by introducing multiple iteration steps in the reconstruction process. The resulting superior image quality enables to reduce dose by up to 60%.

In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size,

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anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. The following test method was used to determine a 54 to 60% dose reduction when using the SAFIRE reconstruction software: Noise, CT numbers, homogeneity, low-contrast resolution and high contrast resolution were assessed in a Gammex 438 phantom. Low dose data reconstructed with SAFIRE showed the same image quality compared to full dose data based on this test. Data on file.

PET System

The PET imaging capability of the Biograph mCT consists of the multi-LSO-detector ring system with 3D acquisition and reconstruction and 81 (optional 109) image planes with a 164 (optional 221) mm axial field of view.

FlowMotion Technology provides:

Improved planning workflow, acquisition and reconstruction with continuous table movement PET acquisition, a simple CT-like planning workflow and high resolution optimized image processing. Precise CT-like planning for PET provides flexibility for scan area allowing reduced radiation dose. Simple customization of protocols provides the ability to incorporate features for motion management, varied speed for focused image quality and improved throughput, and maximum reconstructed image resolution for the most demanding clinical and research applications. Additional benefits include:

- PET acquisition without the limitation of bed positions
- Ability to customize scan protocols to the specific physician preference for each patient
- Enables easy setup for up to 4 scan regions for optimized scan parameters in each body area
- Maximum reconstructed image resolution for the most demanding clinical and research applications with 81 (optional 109) image planes across 164 (optional 221) mm axial field-of-view at 2.0 mm slice spacing with 128 x 128, 200 x 200, 256 x 256, 400 x 400, and 512 x 512 reconstruction matrices.
- Designed for improved axial uniformity, end-plane sensitivity and increased reproducibility
- Up to 32% CT dose reduction for ALARA dose
- One-click CT-like range planning to scan the precise area needed
- Improved patient satisfaction due to a sense of progress being made with constant bed motion during acquisition

OptisoHD detection system provides:

- High spatial slice resolution in trans-axial and axial dimensions.
- Slice spacing (2 mm) optimized for speed and resolution.
- Pico-3D ultra fast electronics for decreased deadtime and high signal-to-noise.
- Acquisition computer system for high count rate capability.
- Reconstruction system for fast reconstruction of PET data.
- Three-dimensional display of organs with a large axial view.
- Excellent volume sensitivity.
- Fast acquisition and reconstruction at any available matrix size.
- Unique block detector technology provides excellent temporal and energy resolution response.
- Simultaneous data acquisition and image reconstruction for high patient throughput.
- Static and whole body acquisition capability.
- 842 mm detector ring diameter.
- 78 cm gantry aperture.
- 70 cm transverse field of view
- 164 (optional 221) mm axial field of view.
- Dedicated Patient Handling System.
- TrueC advanced scatter correction technique

Supported image sizes

Patient Handling System

Description

The Biograph mCT patient handling system (PHS) has a unique reinforced cantilever design that ensures reliable patient support with the high weight capacity and minimal pallet deflection. As one of the pillars of SMART (Siemens Molecular & Anatomical Registration Technologies), the PHS provides:

- Reinforced cantilever design for maximum patient support and absolute positioning between PET and CT scan.
- Integrated patient table design for easy patient positioning.
- Low attenuation carbon fiber pallet.
- 43 cm vertical motion range.
- Maximum 203 cm PETCT co-scan range (198 cm with TrueV option).
- Low attenuation head holder, table extensions, head-arm support, knee-leg support.
- Maximum patient weight of 227 kg (500 lbs.).

Control and evaluation unit:

CT control box with intercom system with user-programmable patient instruction system. Dual monitors (19 inch (48 cm) LCD flat panel displays), keyboard and mouse for syngo Acquisition Workplace.

Computer system:

The computer system of the Biograph mCT consists of four components.

- syngo Acquisition Workplace console for the planning and execution of the CT examination, including evaluation and management of the CT images
- Reconstruction computer for the preprocessing and reconstruction of the CT data
- PET acquisition system
- PET data reconstruction system with supported image reconstruction of 128 x 128, 200 x 200, 256 x 256, 400 x 400 and 512 x 512.

The syngo Acquisition Workplace console consists of a high-performance Celsius Windows 7 based computer with Quad Xeon processor, 8 GB RAM, 300 GB storage capacity for 480,000 images, DVD DICOM with 4.7 GB media for 8,000 images. External USB 2.0/3.0 devices for data storage are supported.

The CT reconstruction computer contains a cluster of high-performance processors performing the preprocessing and reconstruction of the CT data at up to 40 images/sec (512x512). Raw data memory is 1.5 TB.

The PET acquisition system provides high performance acquisition and sorting of 3D coincidence events. Supports 3D static and 3D whole body acquisition modes. Disk storage of 1.0 TB for PET raw data is provided.

The PET reconstruction system provides fast 3D image reconstruction of the PET raw data. Iterative and backprojection are supported.

syngo User Software:

syngo features an intuitive and thus easy-to-learn user interface. syngo visualizes the examination in individual process steps on so-called task cards, such as patient registration or examination card. A Large number of functions and input parameters as well as the language used can be selected according to individual requirements. Frequently repeated processes can be automated and saved.

Patient registration - The system can accept patient data in different ways. These include entering the data via keyboard or transfer of a worklist via network. DICOM Worklist: Software module for accepting lists of patient data and exam requirements from a Radiology Information Systems (RIS) via DICOM Get Worklist functionality. The program enables very efficient working and ensures consistent patient data.

Examination card - The scanner is supplied with a large number of predefined CT and fully integrated PET•CT examination protocols, making examination planning a very fast and efficient procedure.

Viewing card - On the viewing card it is possible to move interactively with the mouse through the image volume of the ongoing examination. The images of different examinations can be displayed in parallel for comparison. A large number of functions are available for evaluation, documentation and archiving.

Filming card - A virtual film sheet shows a 1:1 display of the film sheets to be printed out, thus permitting an

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effective preview of the filming job and re-windowing the images, as well as providing a large number of evaluation functions. Layout changes are possible interactively with up to 64 images. The printout parameters for the ongoing auto-filming running parallel to acquisition or reconstruction are also defined with the filming card.

3D card - The 3D task card contains the User Interface for the operation of the MIP (Maximum Intensity Projection), SSD (Surface Shaded Display), MPR (Multi-planar Reconstruction) three-dimensional post-processing. The 3D card also features an intuitive and fast bone removal function for CTA post processing and presentation.

3D VRT - Advanced 3D functionality as an extension to the basic 3D viewer, containing volume rendering technique (VRT) and advanced editing functions. Advanced 3D application package for the optimal display and differentiation of different organs through independent control of color, opacity, and shading in up to 4 tissue classes.

CT Angio: Software for the reconstruction of angular projections from the images of a spiral data record for the display and diagnosis e.g. of aneurysms, plaques, stenoses, vascular anomalies or vascular origins. MIP: Maximum Intensity Projection, MinIP: Minimum Intensity Projection and Thin MIP available. Interfering or irrelevant parts of the image can be eliminated with the integrated volume editor. The angular projections are reconstructed around a definable axis, whereby the maximum CT values in this direction are selected for each angular projection. The resulting images can be viewed with the CINE function as a series of images with a 3D image effect.

Workstream – Planning and reconstruction of diagnostic CT coronal, sagittal, oblique and MIP images can take place directly after scanning.

DynEva card: Software for dynamic evaluation of the contrast enhancement in organs and types of tissues, enabling the reconstruction of

- Time-density curves (up to 5 ROIs)
- Peak-enhancement images
- Time-to-peak images.

Video Capture and Editing Tool: Software contains integrated solution for imaging and visualization of 4D information, allowing the generation and editing of video files for improved diagnoses, recording and teaching. A wide range of multimedia formats is supported, e.g. AVI, Flash (SWF), GIF, QuickTime (MOV), streaming video.

HD FoV Pro - Extended Field of View - option which allows visualization of objects with a CT FOV up to 78 cm., and improved CT image quality beyond the traditional 50 cm CT FOV for improved PET attenuation correction. HD FoV Pro can show reconstructed CT attenuation values outside the conventional FoV with an accuracy of +/- 50 HU within a 65 cm FoV.

TrueD Basic: Single-mode, single timepoint layout for displaying the PET and CT either fused or side-by-side comparison with viewer formats and color map tables. Support for 3D spherical regions-of-interest with units of Bq/ml or Standard Uptake Value (SUV). Allows re-registration of PET to CT data for correction of misregistration as a result of patient motion.

Media Viewer: Provides basic viewing capabilities in a portable Windows-based application that can be burned to media (CD, DVD) along with patient images. Not intended for diagnostic use.

- Review volume datasets from CT and PET
- Supports viewing single-modality or fused images
- View linked axial, coronal, and sagittal views
- Navigate in three dimensions
- View MIP images correlated to axial, coronal, and sagittal views
- Blend fused images
- Quantify Hounsfield units, SUV

CARE Solutions:

UFC Detector: Up to 30% dose reduction compared to conventional CT detectors. High efficiency for low mAs requirements enable best possible image quality with low patient dose.

CARE Filter: Specially designed X-ray exposure filter installed

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at the tube collimator. Up to 25% dose reduction with increased image quality.

With the introduction of Siemens' unique FAST CARE platform, the Biograph mCT is set to raise the standard of patient-centric productivity. Utilizing FAST – Fully Assisting Scanner Technologies -, typically time-consuming and complex procedures during the scan process are extremely simplified and automated, not only improving workflow efficiency, but optimizing the overall clinical outcome by creating reproducible results, making diagnosis more reliable and reducing patient burden through streamlined examinations.

FAST Scan Assistant: An intuitive user interface for solving conflicts by changing the scan time, resp. the pitch and/or the maximum tube current manually.

FAST Adjust: assists the user to handle system settings in a fast and easy way by automatically solving of conflicts within user defined limits by one single click on the FAST Adjust button. The limits for scan time and tube current per scan are defined via the Scan Protocol Assistant. FAST Adjust offers an undo functionality to return to previously set values.

CARE kV: Automated, organ-sensitive voltage setting to optimize contrast-to-noise-ratio and reduce dose by up to 60%.

CARE Profile: Visualization of the dose distribution along the topogram prior to the scan.

CARE Dashboard: Visualization of activated dose reduction features and technologies for each scan range of an examination.

CARE Child - Pediatric Protocols: Special examination protocols with 70 or 80 kV and a large range of adjustable mAs values for optimum adaptation of the radiation exposure to the age and weight of the child to be examined.

CARE Topo: Real-time topogram, Manual interruption possible once desired anatomy has been imaged.

CARE Bolus: Operating mode for CM-enhancement triggered data acquisition. The objective is optimum utilization of the contrast medium bolus in its "plateau" phase in the target organ. This option has been especially adapted to the increased speed and timing requirements resulting from the multirow capability and faster rotation. The CM enhancement is observed via monitoring scans in a user-defined ROI with a trigger threshold. As soon as the enhancement reaches its predefined threshold, the spiral scan is triggered as quickly as possible. License for software use on one modality.

CARE Dose4D: This software feature provides automatic, real-time x-ray dose management for all scan modes. The minimal x-ray dose level needed to obtain optimal image quality is determined from extensive computer analysis of the Topogram image and also from the data collected during every slice scanned, on a real time basis. This automatic approach ensures optimal image quality at the lowest possible x-ray dose. CARE Dose4D uses at first a automated adjustment of the dose level depending on patient size based on the attenuation values obtained from the standard topogram along the patient axis. In addition CARE Dose4D uses a real-time adaptation of the tube current during the scan based on the actual attenuation of the X-ray beam measured around the patient. Up to 2,320 projections are evaluated per second to optimize the mA level instantaneously. In combination with the extreme adjustment speed of the tube current, CARE Dose4D ensures consistent high quality images in every anatomical position. And that's at anytime with the minimal possible X-ray dose.

- Several clinical benefits are achieved with CARE Dose4D:
- Significant x-ray dose reduction (up to 68 %) possible for all body regions scanned compared with standard sequence or spiral scanning;
- Consistent, optimal image quality with the x-ray dose level unique for every patient and for every anatomical region;
- Thinner axial slices and/or longer scan ranges possible because of reduced tube loading;
- Ultra-low dose examinations for pediatric patients.

CARE Dose Configurator: Enhancement of Siemens' renowned real-time dose modulation CARE Dose4D, introducing new reference curves for each body region and for each body habitus allowing to adjust the configuration even more precisely to the patient's anatomy.

Dose Notification: The Biograph mCT provides the ability to set dose reference values (CTDIvol, DLP) for each

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scan range. If these reference values are exceeded the Dose Notification window informs the user.

Dose Alert: The Biograph mCT automatically adds up CTDIvol and DLP depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.

Adaptive Dose Shield eliminates clinically irrelevant radiation in every spiral scan, adding to the lowest possible dose that CARE Solutions provide.

Examination and Evaluation Functions:

Topogram: Scanning perspectives: a.p., p.a., lat.; length of scan field: 128 - 2200mm, width of scan field: 512 mm, 1.5 - 20s. The topogram can be switched off manually when the desired examination length is reached.

Tomogram: Scan field size: 50 cm. Standard scan times: 0.28, 0.33, 0.5 and 1 seconds.

Slice thickness in sequence: 0.6, 0.75, 1, 1.2, 1.5, 2.0, 2.4, 3, 4.0, 4.8, 5, 6, 7, 7.2, 8, 10, 14.4, 15, 20 mm

Slice thickness in spiral: 0.4**, 0.5, 0.6, 0.75, 1.0, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm
(*optional with z-UHR)

Real-time image display. Immediate image reconstruction and display without time delay simultaneously to data acquisition in 512 x 512 matrix size.

Spiral: Scanning technique for continuous volume scans with continuous table feed in multirotation mode. Max. scan time 80 seconds and up to 2M scan length with full low-contrast resolution. Selection of the pitch factor between 0.35 and 1.7 depending on scan mode. Selection of up to 33 separately parameterizable examination ranges in a patient protocol. In addition individual anatomic sections can be successively combined and then scanned automatically. Storage of up to 10,000 examination protocols. Rotation times/cycle: 0.28, 0.33 sec, 0.5 sec and 1 sec.

Dynamic: Program for functional dynamic examinations. Serial scanning technique in one slice position with variable scan cycle times.

Serio sequential examination without table feed: Up to 100 scans in uninterrupted, continuous sequence without table feed. Scan cycle time: 0.5-60 seconds.

Multiscan spiral examination without table feed: Continuous multirotational data acquisition in one slice position. Quantitative evaluation and graphical display of time-density curves.

WorkStream4D with Asynchronous Recon: 4D workflow with direct generation of axial, sagittal, coronal, or double-oblique images from standard scanning protocols. Elimination of manual reconstruction steps. Asynchronous Recon allows for multiple image reconstructions and reformats, parallel to scanning. With this feature, up to eight reconstruction job requests can be loaded into a scan protocol. Immediately upon completion of the scan acquisition, these reconstruction jobs are automatically executed in the background without delaying the start of next patient examination.

Image reconstruction and storage: Image reconstruction in full resolution (512 x 512 matrix) takes place during the examination with up to 40 images per second, with full cone beam reconstruction, z-Sharp Technology and full image quality. Reconstruction fields of 5 cm to 50 cm through raw data zoom with the possibility of freely selecting the image center either prospectively before each scan or retrospectively. Reconstructions of different slice thicknesses from a single raw data record, e.g. lung soft tissue and lung high-contrast with CombiScan, with simultaneous suppression of partial volume artifacts. Up to 8 reconstructions per scan range can be predefined with the examination protocol. Patient-related storage of the image and raw data.

Image display: 1024 x 1024 display matrix; screen splitting configurable up to 128 image segments; CT value scale from -1024 to +3071 HU. For very dense objects, the CT value scale can be extended from -10240 to +30710 HU (extended CT scale) e.g. for suppressing metal artifacts.

Image evaluation: Complete software-controlled image evaluation program for all diagnostic requirements.

CINE Display: Dynamic display technique for the visualization of time or volume series. A series of up to 1024 images can be displayed at a frame rate of at least 30 f/s. Automatic or interactive mouse-operated control.

Multitasking functions: Simultaneous processing during operation of the scanner.

Real-time Display: Image reconstruction in pace with the examination in full image quality (512 x 512 matrix) with up to 40 images/second (with full cone beam reconstruction and z-Sharp Technology).

Description

Metro Display: Simultaneous display, processing and evaluation of images from other patients while the current patient is being scanned.

Metro Documentation: Simultaneous documentation of images from any previously examined patient while the current patient is being scanned.

Metro Copy: Automatic transfer of image data to the syngo CT Workplace (optional) or a DICOM network node.

Networking and Documentation

For the connection to a local Ethernet (10, 100 Mbit or 1-Gigabit) in order to communicate with networked printers, diagnostic and therapy workstations, RIS or HIS systems and teleradiology routers.

Scope of functions:

- Configurable network stations.
- Unlimited selection of stations.
- DICOM Standard (Digital Imaging and Communications in Medicine) for the transfer of information between DICOM-compatible units from different manufacturers. The scope of functions is described in detail in the DICOM Conformance Statement, and the standard version comprises the functions Send/Receive, Query/Retrieve and BasicPrint, Worklist, Storage Commitment, MPPS (Modality Performed Procedure Step).

System Documentation (1 set)

Siemens Remote Service:

Siemens Remote Service (SRS) offers a wide range of medical equipment-related remote services resulting in increased system availability and efficiency. SRS employs sophisticated authentication and authorization procedures, state-of-the-art encryption technologies and logging routines together with strictly enforced organizational measures that provide optimal patient data security and access protection. The following SRS services are included for all service agreement customers and during warranty period:

Remote Diagnosis & Repair: In case of an unforeseen system malfunction, Siemens competent experts may directly connect with the CT system in order to identify the problem quickly. Moreover the remote repair function enables Siemens to often correct software errors immediately. Should an engineer on site be required, Remote Diagnosis & Repair allows Siemens to identify defective parts efficiently and accelerate their delivery, thereby keeping repair times to a minimum.

Event Monitoring: Event Monitoring screens the performance of the system. If a parameter deviates from a predefined value, a status message is automatically sent to the Siemens UPTIME Service Center. Service Engineers may evaluate the status message at periodic intervals and may initiate appropriate action within the scope of the service agreement.

The Biograph TrueV option provides additional PET axial coverage (22.1 cm/109 image planes) providing improved system sensitivity and count rate performance for enhanced patient throughput, reduced radiation dose and/or improved image quality. The extended axial field-of-view reduces the number of bed positions needed for whole body imaging relative to the standard coverage mCT systems, while providing greater coverage for single bed static and listmode (gated or dynamic) acquisitions.

The option supports adaptive prospective ECG-triggered sequence scanning and adaptive retrospective ECG-gated spiral scanning to obtain CT images of the heart in defined phased of the cardiac cycle at a minimum rotation time of 0.33 s (0.28 s for Edge, 0.30 s optional for 64). With prospective ECG-triggered sequence scanning, quick scans are triggered by ECG signals. A temporal resolution of up to 165 ms (142 ms for Edge) can be achieved. Retrospective gating is based on a continuous spiral scan with simultaneous ECG recording. The cardio spiral reconstruction allows volume imaging in selectable phases of the cardiac cycle. With retrospective ECG-gated spiral scans the ECG signal can be edited for improved image quality in the case of severe arrhythmia. A dedicated "Preview" tool enables the planning of the volume reconstruction during an optimal cardiac phase on the basis of axial single slices. With ECG-pulsed control of the tube current a dose reduction of approx. 50% can be achieved with retrospective ECG-gated spiral scans. The special scan protocols "Cardio-Care" and "Cardio-Sharp" offer a special filter technique for cardiac examinations for improved sharpness and a lower dose. ECG-controlled imaging techniques are the basis for both the quantification of calcified plaques in the coronary

<p>Description</p> <p>arteries (calcium scoring) and 3D reconstructions of the heart and coronary arteries in contrast media studies (CT angiography of the heart). Retrospective ECG gating also allows functional imaging of the heart. Moreover, these techniques suppress pulsation or motion artifacts in the lung and in vessels close to the heart (e.g. ascending aorta). Provides PET cardiac gated list mode acquisition, offline histogramming, and reconstruction for improved accuracy in quantitation as well as visualization of cardiac motion. Supports a maximum of 24 gate bins from the list mode PET acquisition.</p> <p>Requires the optional UPMM for ECG signal capture.</p>
<p>The CT Respiratory Gating and Triggering option is comprised of software components that allow for the capture and storage of a signal representing a patient's respiratory cycle during a spiral or sequence CT acquisition. With the Respiratory Gating feature, the respiratory data is synchronized with the CT acquisition data so that a user can freely select the point at which images are retrospectively reconstructed based on the corresponding respiration amplitude. With the Respiration Triggering feature, the user prospectively selects a point in the respiratory cycle at which sequence images will be acquired.</p> <p>Through the selection and reconstruction processes, organ motion artifacts caused by respiration are minimized or eliminated and a better visualization and localization is possible resulting in more accurate assessment of tumor and organ motion, their position, size, and volume during respiration.</p> <p>These applications generate 4D CT datasets that can be used to create more accurate treatment plans and also for the delivery of respiratory-triggered radiation therapy.</p> <p>Provides PET respiratory gated list mode acquisition, offline histogramming, and reconstruction for improved accuracy in quantitation as well as visualization of organ motion. Supports a maximum of 24 gate bins from the list mode PET acquisition.</p> <p>Requires the optional Respiratory Trigger System.</p>
<p>HD•PET Package provides improved PET image quality compared to conventionally reconstructed images. HD•PET Package contains TrueX, an innovative image processing technique and 3D iterative reconstruction.</p> <p>TrueX is an innovative image processing technology that is the key to achieving HD•PET performance levels. Conventional PET does not take into account the detector geometry and incorrect positioning of the LORs. HD•PET incorporates measured point spread functions (PSF) into the iterative reconstruction algorithm. Through modeling of the PSF, HD•PET more precisely accounts for the positioning of the LOR yielding visually sharper clinical images, visual improvements in contrast and in resolution.</p> <p>3D Iterative reconstruction (OSEM) provides improved image quality in the most demanding low statistics acquisitions.</p>
<p>The iMAR CT metal artifact reduction algorithm combines three successful approaches to reduce metal artifacts: beam hardening correction (in sinogram regions of less severe metal attenuation), normalized sinogram inpainting (in sinogram regions of high metal attenuation), and frequency split (to mix back noise texture and sharp details that are potentially lost during inpainting).</p> <p>The correction process is then iteratively refined by repeating the normalized sinogram inpainting and the mixing steps thanks to the Adaptive Sinogram Mixing.</p> <p>Along with the new algorithm comes the simple user interface of iMAR. Besides the typical reconstruction parameters it only requires to select the desired protocol from a drop down menu which contains the following type of implants: dental fillings, neuro coil, thoracic coil, hip implants, extremity implants, pacemakers, spine implants and shoulder implants.</p>
<p>Including 3D Spatial Resolution (NU 2-2012 Ch. 3); 3D scatter fraction, Count losses, and randoms measurement (NU 2-2012 Ch 4); 3D Sensitivity , according to (NU 2-2012 Ch 5). Modifications, changes or additions to these tests subject to factory approval and quotation. All radioisotopes (e.g. Fluorine-18) to be provided by the site. Loaner phantoms available from factory. 90 day lead time on scheduling. Estimated 1 week to complete measurements on site.</p>

Description
<p>Sources consist of the following:</p> <p>2 LS-ART Set-up rod sources (Max. 46.25 MBq per rod source) 1 CS-27 Low Activity Uniform Phantom (Max. 92.5 MBq)</p> <p>Disposal of sources is not included in sale price.</p>
<p>This system is in compliance with NEMA XR-29 Standard Attributes on CT Equipment Related To Dose Optimization and Management, also know as Smart Dose</p>
<p>BU part: 11154967 Local part: AS11154967</p> <p>Features include: connection of max. three connecting ports for sensors, connection of max. three interfaces for external devices.</p> <p>The system is used for capturing and storing a signal representing the patient's respiratory cycle during a CT acquisition. With the respiratory gating function the respiratory data is synchronized with the spiral CT acquisition data so that the user can freely select the point at which images are retrospectively reconstructed based on the corresponding respiration amplitude. With the respiratory triggering feature, the user selects a point in the respiratory cycle at which sequence images will be acquired.</p> <p>The connection to the CT gantry is done with the supplied connection cables. The patient gets a breast belt with load cell sensor, which is connected to the evaluation console via a Sensor Port and a Relay Box. The application is started with selection on the CT console. The monitor of the Notebook PC displays of the respiration signal. When an unexpected respiratory waveform appears, the operator can stop Gate Signal output by an intuitive action of the Gate Disable Switch.</p> <p>Specification: The AZ733VI Respiratory Gating consists of: 4pcs of chest/abdominal belts with different sizes 2pcs of load cells with different characteristics Relay Box Sensor Port Gate Disable Switch Load cell calibration Laptop PC Connecting cables Power: 100-240 V, 50/60 Hz</p>
<p>This educational offering must be completed by the later of (12) months from purchase of training or if applicable, completion of installation. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.</p>
<p>The X-ray tube's kilo voltage (kV) determines the average energy level of the X-ray beam. Changing the kV setting results in an alteration of photon energy and a corresponding attenuation modification of the materials scanned. In other words, X-ray absorption is energy dependent, e.g. scanning an object with 80 kV results in a different attenuation than with 140 kV. In addition, this attenuation depends also on the type of tissue scanned. Iodine, for instance, has its maximum attenuation at low energy, while its CT-value is only about half in high-energy scans. The attenuation of bones, on the other hand, changes much less when exposed to low-energy scans compared to high-energy examinations. syngo Dual Energy Scan for Single Source exploits this effect: Two spiral data sets acquired in sequence at different energies show different attenuation levels.</p>

Description

TwinBeam Dual Energy is routinely applicable for virtually all patients without compromising on image quality or radiation dose. To create two X-ray spectra (high and low) simultaneously from one tube, the Straton® tube assembly system generates a prefiltered X-ray beam before it reaches the patient. Due to additional filtration, this technique requires the strengths of tube power reserves that are available on Siemens CT scanners with the Straton tube.

Routine-ready workflow

TwinBeam Dual Energy in combination with FAST DE Results paves the way for dual energy in clinical routine. As part of an advanced workflow, FAST DE Results generates dual energy datasets at the acquisition workplace with results sent directly to the reading environment for a straight forward workflow that delivers advanced diagnostic information. Monoenergetic images at different keV levels are reconstructed as mixed images without additional interaction.

FAST DE Results enables a straight forward Dual Energy workflow. You can select dedicated Dual Energy applications at the AWP and they will be sent directly to the PACS without any interaction needed. Available applications for FAST DE Results are:

- DE Monoenergetic (40 keV, 50 keV, 70 keV, 100 keV, 120 keV, 140 keV, 190 keV)
- DE Mixed images
- DE Iodine overlay image
- DE VNC image
- DE Iodine + VNC
- DE Optimum Contrast

FAST DE Results is as easy as selecting a recon job and will enhance your daily workflow significantly.