

REQUISITION: 521-B92017
REQUESTING SERVICE: RADIOLOGY SERVICE
SHIP TO: CHIEF, A&MM
V.A. Medical Center
700 SOUTH 19TH ST
BIRMINGHAM, AL 35233

TRADE IN Siemens Definition DS

Qty

Item Description

1

SOMATOM Force

The all new SOMATOM Force contains two Vectron X-ray tubes with unprecedented tube current (2 x 1,300 mA) and generator power (2 x 120 kW). The StellarInfinity detector, including TrueSignal and Edge Technology provides increased in plane resolution (1,840 channels) and ~ 50% increased z-coverage, compared to SOMATOM Definition Flash. SOMATOM Force takes CT imaging where it has never gone before by routinely generating ultra-thin 0.5 mm slices e.g. for most accurate stenosis, plaque and stent analysis and for low-kV imaging without compromises, even in adults or obese patients at scan speeds up to 737 mm/s (opt.). Additionally, the all new measurement system sets the benchmark in low contrast detectability. An object size of 2 mm, at a contrast difference of 3 HU, with a CTDIvol (Ø 32 cm) of only 12.3 mGy (with Phantom CATPHan (20 cm)) can be detected.

The all new SOMATOM Force gantry, with its powerful hollow shaft motor achieves maximum rotation speeds of up to 0.25 seconds (opt.) resulting in 66 ms temporal resolution, enabling you to freeze motion independent of heart rate. It features the industry leading Turbo Flash mode, with a dynamic Field of View (FoV) of up to 50 cm, even in ultra-high pitch applications (up to 737 mm/s table speeds, Opt.).

Besides, it enables reduction in dose, while it improves overall image quality (both high- and low-contrast resolution) for all scans, resulting, e.g. in dose down to sub-mSv for cardiac imaging and below. In its third generation, Dual Energy with Selective Photon Shield II (~ 30% better energy separation, for more precise Dual Energy quantification), automatically provides a second contrast for the best possible diagnosis without any extra dose at a Dual Energy Field of View (FoV) of up to 35 cm at scan speeds up to 285 mm/s (opt.).

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syngo CT VB20

The software syngo CT VB20 enables new, but separately licensed features like Precision Matrix as well as enhancing several already existing features, e.g. FAST DE Results, DirectDensity(tm), increased image storing capacity, as well as FAST 3D Camera and Touch Panel workflow.

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ELEVATE O SOMATOM Force

ELEVATE from an outdated Siemens CT scanner to SOMATOM Force

1

Cooling System Water/Air #split

Water-to-air heat exchanger for the dissipation (to the air outside) of heat, generated in the gantry.

Qty	Item Description
1	Trafo for cooling system water/air For adequate power consumption the chiller system may need an additional transformer: If the electrical connection to be used can not provide either 400V at 50Hz or 460V at 60Hz this transformer is needed.
1	Service Switch Service switch to shut off the outdoor cooling unit for maintenance or in case of emergency
1	Multi-purpose table The Multi-Purpose table is especially designed for multi-disciplinary use, while still enabling ultra-fast spiral scanning (up to 737 mm/s with HeartView in Turbo Flash spiral). Its flexible design allows exchanging table tops for routine radiology, trauma or bariatric use.
1	Mat for MPT Standard Table Top Replacement for the positioning mattress for Standard Multi Purpose Table Top
1	High Cap. Patient & Trauma Tab.Top The high capacity and trauma table top offers the capability to support up to 307 kg/676 lbs of patient weight. It allows easy positioning and transfer from and to the table, due to its flat surface. Special accessories and an extended table top width of 530 mm ensure a safe and comfortable positioning for obese patients.
1	High Cap. Patient & Trauma Acc Kit The High capacity and Trauma accessory kit contains additional Patient restraint set with a width of 400mm and additional table extensions for feet and head.
1	Mattress for Bariatric Table Top This mat is used for scanning non-bariatric patients on the flat, bariatric table top. Placing this mat on the bariatric table top eliminates the need to exchange the table top when non-bariatric patients are scanned. This mat has a curved profile and enables comfortable positioning of non-bariatric patients.
1	Infusion Holder A table attachment which provides a place for the patient infusion bags or bottles to be hung, so that the holder moves with the table during an acquisition.
1	Table Side Rails Side rails enable the quick and easy attachment of additional accessories such as an infusion bottle holder and i-control intervention module to the patient table.
1	FAST IRS Reconstruction computer for the preprocessing and reconstruction of the CT raw data. The reconstruction computer contains of a cluster of high-performance GPU boards performing the preprocessing and reconstruction of the CT data.
1	Force Imaging We combine our market leading applications to make this the most personalised scanner for our customers. Including SureView, Turbo Flash Spiral, Adaptive Dose Shield, CARE Dose 4D, CARE kV, CARE Child, CARE Profile, CARE Dashboard, CARE Bolus, Dose MAP, FAST Adjust
1	Force Imaging - Advanced The Imaging Advanced Package combines ADMIRE, X-CARE and CARE Contrast to bring imaging to the next level.
1	High-speed 0.25 s rotation High-speed 0.25 s rotation
1	Force Reading

Qty**Item Description**

our customers. Includes VRT, Workstream 4D and Extended FoV.

1

Force Reading - Advanced

We combine our advanced applications to make reporting of complex and atypical anatomical structures faster and simpler.

Includes:

iMAR for anatomically driven metal artifact reduction, combining three successful approaches (beam hardening correction, normalized sinogram inpainting and frequency splitting). This reduces artifacts caused by metal implants.

FAST Spine, providing anatomically aligned preparation of spine recons with just a single click.

HD FoV, special reconstruction algorithms allow for visualization of objects using a FoV up to 65 cm with an image quality suited for radiation therapy planning

UHR mode, with the wide large UHR-Comb, delivers Ultra High resolution in plane of up to 32lp/cm (0.16 mm) for high defined imaging of small structures such as inner ear or even the lung, joints or fractures of the bone. The UHR Collimation could be increased to 32 x 0.6 mm collimation.

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syngo Expert-I #AWP

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

1

Force Function

We combine our market leading applications, Dual Energy, Cardiac and Dynamic Imaging, to make quantitative scanning and cardiac analysis more accessible and simpler to use.

1

FAST Integrated Workflow

We combine our market leading applications to make positioning simple for our customers.

The world's first 3D camera integrated into a CT positioning workflow is available as an option and allows automatic patient positioning in the examination room.

The FAST 3D camera captures the patient's shape, position, and height in three dimensions. Using infrared measurement, it even recognizes body contours: for example, when people are wearing heavy clothes or blankets.

Specialized applications support accurate and reproducible positioning:

FAST Isocentering, at the push of a button, provides the correct isocenter position, enabling the right dose modulation and consistent images.

FAST Range supports scanning the correct body region in the topogram with no cut-off - by aligning the automatically identified anatomical position with the protocol.

FAST Direction helps safeguard the right scan direction of the topogram, which is crucial when moving the table with infused patients.

FAST Topo - enables faster scan speeds in topograms, which minimizes breath-hold artifacts. It also has the potential to decrease the topogram dose.

FAST Planning - assists scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning.

FAST 3D Align - automatically corrects misalignment of anatomic structures, organs of the

Qty	Item Description
	reconstruction workflow. Additionally, it minimizes the black area in the image by automatically adjusting the recon field of view selection.
1	<p>Adapt. 3D Intervent. Suite Wireless</p> <p>The complete solution for 2D and 3D non fluoroscopic and 2D fluoroscopic minimal invasive volume interventions.</p> <p>The Adaptive 3D Intervention Suite contains Adaptive 3D Intervention for 3D volume intervention.</p> <p>Intervention Pro for spiral and sequential non- fluoroscopic interventional procedures and complete organ coverage with maximal flexibility and with minimal single click effort</p> <p>i-Fluoro CT allows for 2 dimensional interventional fluoroscopic procedures</p> <p>i-Control CT supports interventional procedures as independent remote unit</p> <p>Foot switch for radiation release (x-ray).</p>
1	<p>Dual 19 Monitor #D</p> <p>Siemens proprietary syngo software visualizes the examination workflow in individual process steps on so-called task cards, such as the patient registration, examination, viewing or 3D task card. The dual monitor feature enables the split of the syngo task cards on two monitors in two different ways. This option includes the syngo dual monitor software and a second high resolution, flicker-free, 19-inch (48 cm) color flat panel display for medical diagnostic applications. This display provides a resolution of 1280 x 1024 and has a wide viewing angle, features high contrast even under high ambient light conditions. Display light output stability is ensured by controlled backlight throughout the whole lifetime.</p> <p>Possibility one: One monitor displays the viewing task card, for instance for the interactive review of image data. All other syngo task cards are displayed on the second monitor.</p> <p>Possibility two: Both monitors display the 3D-Basic task card, enabling the viewing and manipulation of two different datasets on two monitors. It enables the comparison of two series from the same patient e.g. pre- and post-contrast or the comparison of two studies from the same patient e.g. pre- and post-surgery.</p>
1	<p>Dual Monitor Cart</p> <p>19 flat screen monitor (2x)</p> <p>The 19 monitor option supports CT interventions and CT fluoroscopy with a display in the examination room.</p> <p>Dual Monitor Cart</p> <p>Mobile equipment cart for the accommodation and safe installation of one or two monitors in the examination room.</p>
1	<p>Tunnel Light</p> <p>SOMATOM Force offers a tunnel mood light (LED) in different, preset, adjustable colors that are synchronized with the gantry ring light. It makes the gantry bore appear wider thus making it easier for patients with claustrophobia to undergo their examination.</p>
1	<p>Ring Light</p> <p>SOMATOM Force offers a gantry ring mood light (LED) in different, preset, adjustable colors that are synchronized with the gantry tunnel light. They help create a relaxing atmosphere for your patients, making a SOMATOM Force examination even more exciting and memorable.</p>
1	<p>Patient Restraint 400 mm</p> <p>400 mm wide restraint strap for the safe positioning of even obese patients on the patient table.</p>
1	<p>Head Holder</p> <p>Head holder for the fixation of the patient's head in combination with the cushion set.</p>
1	<p>Head-Arm Rest</p>

Qty	Item Description
	unconscious patients reliably for CT scanning. It is very useful in emergency rooms, e.g. for whole body scans, as it extends the scan range by about 30 cm. It can be placed in the standard Multipurpose Table accessory holder.
1	Additional Arm Fixation The additional arm fixation enables a quick and safe positioning of the patient's arms close to the patient's body. Especially large patients benefit from the convenient positioning device that prevents patient's arms from slipping off the patient table.
1	Computer Desk, height adjust 110V The height adjustable table (710 mm to 1100 mm) supports optimal ergonomic working positions at the CT consoles. It allows users to switch between the dynamism of a standing desk and the comfort of a traditional desk.
1	Computer Cabinet New cabinet to accommodate the computer system and UPS. Matched to the design of the control console table. Width: 800 mm, Depth: 800 mm, Height: 720 mm
1	Additional User Manual Additional user manual for the above selected CT system.
1	CT Project Management 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.
1	CT Standard Rigging and Installation
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	Additional onsite training 32 hours 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 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.
2	Additional onsite training 24 hours Up to (24) 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 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.
2	Additional onsite training 32 hours Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday -

Qty	Item Description
	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.
1	CT Hands-On Wrkshp at Customer Facility This (4) hour customized workshop will take place onsite at the customer's facility and will be facilitated by Siemens Clinical Education Specialists. Through the use of didactic and/or hands-on training attendees will be able to increase their knowledge and skills to help improve their clinical practice. Workshop must be scheduled consecutively (Monday - Friday) during standard business hours. This educational offering must be completed (12) months from date of purchase order. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	AddL 4 HR Hands-On Wkshp at Cust Facil This additional (4) hour customized workshop for customers, to be delivered consecutively with the initial workshop purchase, will take place onsite at the customer's facility or designated facility and will be facilitated by Siemens Clinical Education Specialists. Through the use of didactic and/or hands-on training attendees will be able to increase their knowledge and skills to help improve their clinical practice. Workshop must be scheduled consecutively (Monday - Friday) during standard business hours. This educational offering must be completed by the later of (12) months from purchase or install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	(2), 4hr Wrkshps in 24 consecutive hrs This (4) hour customized workshop will take place onsite at the customer's facility and will be facilitated by Siemens Clinical Education Specialists. Through the use of didactic and/or hands-on training attendees will be able to increase their knowledge and skills to help improve their clinical practice. Workshop must be scheduled consecutively (Monday - Friday) during standard business hours. This educational offering must be completed (12) months from date of purchase order. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	teampalay Welcome & Registration Package teampalay is a cloud-based network that brings together your imaging modality users, the systems' dose and utilization data, and the users' expertise to help you improve the delivery of care to your patients. Basic features are provided free of charge. Premium features (benchmarking, non-Siemens devices) are provided on a trial basis for three months at no charge, and may be used thereafter on a subscription fee basis. To register: http://teampalay.siemens.com/#/institutionRegistration/1
1	Riedel Chiller Start-up by SBT
1	Surge Protective Device (SPD)
1	Stellant D Dual Pedestal w/Certegra WS Stellant D Dual Pedestal with Certegra Workstation NO Informatics, but is Informatics ready. Includes Dual Flow as standard. Includes Stellant D, Dual Head, pedestal mounted injector; Certegra workstation; installation and warranty through Medrad.
1	Medrad ISI900 interface,w/install
2	CT Slicker Thermoseal seams and flaps deflect fluids, reducing contaminant penetration into the cushion and table. Contaminants are retained on the tabletop or shunted to the floor. Cleanup is faster, more thorough, and contaminant build-up is reduced. Built using heavy, clear, micro matte vinyl, and top grade hook and loop fastening strips (Velcro) to better fit the specified table. Custom vinyl resists tears and minimizes radiologic interference. Latex free. Set includes CT Skirts.

Qty	Item Description
1	<p>Includes warranty from RADSCAN Medical.</p> <p>Low Contrast CT Phantom & Holder</p>
1	<p>Protocol Touch Insufflator</p> <p>Automated Carbon Dioxide Insufflation System for Virtual Colonoscopy</p> <p>Regulated pressure gradually distends the colon, and maintains that distention for the duration of the study.</p> <p>No special utilities required: PROTOCOL Touch uses standard medical grade (USP) D or E size carbon dioxide cylinders, or a central supply source, and connects to a standard hospital electrical receptacle.</p> <p>PROTOCOL Touch displays instantaneous gas pressure reading, records the total volume delivered during the procedure, and alerts the operator when the CO2 cylinder is low.</p> <p>An accessory cart provides storage facilities for CO2 cylinders, and a dedicated holder for administration sets. Sold separately.</p> <p>CO2 cylinders are the responsibility of the customer.</p> <p>Includes one year warranty and training through Bracco.</p>
1	<p>Protocol Touch cart</p> <p>Rolling cart for the Protocol Touch Insufflator.</p>
1	<p>Protocol Touch - CO2 hose</p> <p>CO2 hose which attaches the CO2 tank (supplied by the customer) to the Protocol Touch.</p>
1	<p>Standard UPS for Force</p> <p>The standard partial system uninterruptible power system (UPS) is built directly into the power distribution cabinet (PDC) and supports the critical circuits for table and gantry electronics, console computer, image reconstruction system, and the internal Ethernet switch (to ensure connectivity). This enables safe removal of patient if outage occurs during scanning.</p> <p>The UPS allows for a safe shutdown of the CT scanner in the event of power interruption. The UPS provides 5-7 minutes of power, during which the user is prompted and guided through the process to perform a safe shutdown of the system. This safe shutdown ensures that no data is lost.</p>
1	<p>Access Protection</p> <p>Scan Protocols are password protected allowing only authorized staff members to access and permanently change protocols</p>
1	<p>Adaptive Dose Shield</p> <p>Adaptive Dose Shield for spiral acquisition to eliminate pre- and post-spiral over-radiation.</p>
1	<p>CARE Analytics</p> <p>Stand-alone tool, for installation in any PC in the hospital network, allowing evaluation of DICOM dose Structured Reports (DICOM SR)</p>
1	<p>CARE Dashboard</p> <p>Visualization of activated dose reduction features and technologies for each scan range of an examination to analyze and manage the dose to be applied in the scan</p>

Qty	Item Description
1	CARE Dose4D CARE Dose4D delivers the highest possible image quality at the lowest possible dose for patients - maximum detail, minimum dose. Adaptive dose modulation for up to 60% dose reduction
1	CARE Dose Configurator 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.
1	CARE kV CARE kV: First automated, organ-sensitive voltage setting to improve image quality and contrast-to-noise-ratio while optimizing dose and potentially reducing it by up to 60%.
1	Neuro BestContrast The Neuro BestContrast algorithm can provide enhanced tissue contrast, resulting in improved contrast between gray and white matter without increasing image noise. This post processing step is rapid and can be easily incorporated into clinical workflow where it can be used with other dose reduction approaches such as iterative reconstruction.
1	CARE Profile CARE Profile: Visualization of the dose distribution along the topogram prior to the scan
1	DICOM SR Dose Reports DICOM structured file allows for the extraction of dose values (CTDIvol, DLP)
1	DoseLogs Whenever a dose limit exceeds the established reference dose levels (Dose Notification and Dose Alert) a report is automatically created on the system, enhancing your ability to track radiation dose.
1	Dose Alert Dose Alert: Dose Alert automatically adds CTDIvol and DLP values depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.
1	Dose Notification Dose Notification: Dose Notification provides the ability to set dose reference values (CTDIvol, DLP) for each scan range. If these reference values are exceeded the Dose Notification window informs the user.
1	FAST Adjust 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.
1	FAST Scan Assistant 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.
1	NEMA_XR-29 Standard This system is in compliance with NEMA XR-29 Standard Attributes on CT Equipment Related to Dose Optimization and Management, also known as Smart Dose.
1	SureView Provides exceptional image quality at any pitch setting, enabling you to scan faster because you can scan at any pitch without degrading image quality

Qty	Item Description
1	UFC Detector Ultra Fast Ceramics (UFC) technology is a unique type of scintillation technology material that quickly and efficiently transforms radiation from the X-ray tube into light signals. Its superb overall quantum efficiency and unique short afterglow enable time-critical X-ray detection at low doses and extremely fast data collection.
1	SOMATOM Force System Complimentary Biomed Training This educational offering includes system training tuition for 1 clinical engineering professional on the SOMATOM Force system and the syngo multimodality workstation as applicable. The training curriculum depends on and is limited to the system purchased and may include multiple courses including classroom training in USA or an international site, and/or virtual and web-based training. Additional modality basics training may be required as a prerequisite to these courses and must be purchased separately. This system training includes a 15% discount. Travel and lodging are not included. This educational offering must be completed by the later of (12) months from purchase or install end date; if training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund. This forfeiture does not apply to Federal government agencies.
1	Additional onsite training 24 hours Up to (24) 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 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.

Initial onsite training 32 hrs GovOffset (

Definition DS -60503. project # 2018-2579 deinstall/exp date 1/2022

Definition DS 60503- 2018-2579 deinstall/exp date 02/2020

Offset Somatom Force Complimentary Biomed Training

Offset Part 14440662 Additional User Manual

Offset Part CT_ADD_32 One Additional Onsite Training 32 hours (

DCS Proposal No. 19-66-1323

Qty**Item Description**

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syngo.CT Cardiac Func. Enhance #1

syngo.CT Cardiac Function - Enhancement facilitates assessment of myocardial perfusion.

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syngo.CT Vascular Autotracer #1

syngo.CT Vascular Analysis - Autotracer is an extension for the CT Vascular Analysis module which allows for the automatic identification and anatomical labeling of main vessels.

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syngo.CT Lung CAD #1

syngo.CT Lung CAD provides Computer Aided Detections of solid pulmonary nodules of the lung. Results are presented in syngo.via or - powered by Rapid Results Technology - directly in the PACS.

1

Add'l training 24hrs, syngo.via

Up to (24) hours of on-site clinical applications training on syngo.via navigation and modality specific clinical workflows, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4)users. The training offering must be completed (12) months from the later of turnover date or offering purchase date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

Detailed Technical Specifications

Description

The SOMATOM Force is Siemens' state-of-the-art high-end Dual Source CT that provides the possibility to scan with Turbo Flash speed to be two steps ahead in

- a) Clinical Excellence - At the top of our Dual Source CT portfolio, SOMATOM Force enables new levels of image quality, clinical outcomes, and ultimately precision medicine. Examine patients without beta-blockers, with no need for them to hold their breath, while providing the ability to reduce contrast agent dosage. Make clearly quantified therapy evaluations with dose-neutral Dual Energy.
- b) Workflow Performance - Automated technologies support safe, standardized, and highly efficient workflows – allowing for appropriate dose and reproducible precision from the smallest to the tallest patients.
- c) Expert Leadership - Thinking beyond today, you're connected to the future with an ever-growing expert community, exclusive access to highest quality CT data in the market today and the tools to advanced your research and clinical practice.

SOMATOM Force - the scanner that is able to scan:

- adults and obese patients at very low kV settings in order to save radiation**
- allows you routinely performing exams at 70-90 kV, even in adults. This may potentially reduce the amount of contrast media needed. The SOMATOM Force scanner provides the ability to reduce contrast agent dosage, which can improve patient safety
- for low dose early detection (e.g. in Lung and Colon)*
- with comparable air-to-soft tissue contrast (e.g. lung and colon) at significantly lower dose, compared to Definition Flash)
- to scan soft tissue and the brain at new and higher low-contrast resolution
- with the Turbo Flash mode up to a FoV of 50 cm, dependent on the pitch (min. FoV 35 cm), making it suitable for trauma and ED imaging, also in obese patients
- all organs for dynamic perfusion imaging (whole organ coverage) (opt.)
- 4D dynamic imaging at reduced doses, compared to Definition Flash (opt.)
- 4D dynamic imaging at higher temporal resolution and longer ranges (opt.)
- the whole heart in 4D dynamic myocardial stress perfusion (quantitative) (opt.)
- in Dual Energy without dose penalty at a very high precision for iodine quantification (opt.)
- in Dual Energy at a fast acquisition speed of up to 285 mm/s, at a larger FoV (35 cm) making it suitable for ED/trauma imaging. (opt.)
- the heart in Dual Energy mode with a temporal resolution down to 66 ms (opt.)
- the heart routinely below 1 mSv, and selected patients even at 0.1 mSv (opt.)
- patients without the need for breath hold or holding still
- pediatric patients without controlled breathing
- thorax/heart/abdomen in about 0.2 s at a dose of <3 mSv

Description

- to scan the heart even in the systolic phase with Turbo Flash mode (opt.)
 - to scan the body and the heart at an higher high-contrast resolution (standard: 22 lp/cm @ 0% MTF in x/y plane (0.24 mm) and 16.7 lp/cm in z-direction (0.30 mm))
 - to scan the lung at a slice width of down to 0.4 mm (opt.)
- *The SOMATOM Force *may achieve the same Contrast-to-Noise level (in terms of image pixel noise) in the image at reduced dose.***
- ** "With the low kV / high mA capabilities of the VECTRON tube, SOMATOM Force allows scanning with a very high tube current of up to 1300 mA at 70, 80 and 90 kV, such that a high tube output even for these low kV settings can be achieved. Along with SOMATOM Force's unique Turbo Flash Mode, this scan configuration is also available for conventional spiral or sequential scanning."**

- at 66 ms temp. resolution for all heart rates (even atrial fibrillation) (opt.)
 - obese patients up to 307 kg (opt.) with 78 cm bore and 2 x 120kW
 - at up to 60% lower dose with iterative recon (SAFIRE)* at an unprecedented recon speed
- * In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, 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.

The SOMATOM Force is founded on the two fully-integrated Siemens' Stellar Infinity detector systems, with two revolutionary Vectron X-ray sources, the Turbo Flash Spiral scanning up to 737 mm/s, the diagonal z-Sharp technology, Dual Energy with Selective Photon Shield II and a range of proven CARE solutions from X-CARE to the Adaptive Dose Shield.

Using Siemens' diagonal z-Sharp technology the SOMATOM Force can provide the fastest sub-millimeter volume coverage at industry's highest spatial resolution. The high rotation time of 0.25 seconds delivers excellent temporal resolution up to 66 ms independent from the heart rate.

The SOMATOM Force opens a door to new levels of patient friendliness with the speed to cover the entire thorax in less than a second - if necessary even without a breath hold. A whole-body scan requires only five seconds, while for perfusion or dynamic vascular imaging long-range scans become routine and pediatric scans become sub-second procedures. Your patients will be off the table faster than ever before - with positive feelings about their scan experience. Turbo Flash is also the solution for scanning your most difficult patients (i.e. obese and trauma patients, restless children, patients who cannot hold their breath for long), thus causing no time-consuming interruptions in your daily practice.

And now Siemens is once again redefining speed: the new SOMATOM Force, with the new FAST CARE technology platform, allows you to maximize clinical outcomes - meaning you will have the best possible clinical results, but with significantly fewer resources bound to the CT system. The ultimate goal is to provide you with more time for patients and diagnosis - in effect, patient-centric productivity. The complete examination - from scan preparation, scanning, reconstruction, and data assessment - is streamlined, leading to a fast and reliable diagnosis with less patient burden. Ultimately, the combination of highest image quality and highest patient-centric productivity is the lever to maximizing your clinical outcomes.

Maybe even more important - and impressive - is the significant reduction in dose which allows e.g. for sub-mSv scanning in case of cardiac imaging. Furthermore, the third generation of dual source systems also enables the user to acquire Dual Energy data and benefit from Dual Energy post processing without compromising image quality or dose. Due to the introduction of the new Selective Photon Shield II, with an even further improved energy separation for more precise DE quantification, each scan on the SOMATOM Force can now become a precise Dual Energy scan. At the same time, X-CARE protects individual organs and the most radiation-sensitive body regions - for example, female breasts - by accurately and efficiently minimizing exposure while preserving image quality.

With the new SOMATOM Force with FAST CARE, Siemens introduces several innovative Combined Applications to Reduce Exposure (CARE). CARE kV, for instance, is the industry's first tool that automatically solves the complex equation for optimal image quality at lowest possible dose for each individual CT exam while considering tube voltage, tube current, and contrast changes at different voltages and attenuation. This allows you to benefit from the industry's widest tube voltage range - not only 150 kV for bariatric imaging but now, if

Description

necessary, also down to 70 kV for new safety and image quality standards, not only in pediatric imaging, but thanks to Vectron tube, The SOMATOM Force may also allow obese low kV imaging. Add SAFIRE*, our raw-data-based iterative reconstruction and define low dose for all body regions to take best care of your patients' well-being.

* In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, 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 SOMATOM Force System Overview

- SOMATOM Force Gantry

The SOMATOM Force gantry is founded on two fully-integrated Stellar Infinity Detector systems, with two revolutionary Vectron X-ray sources, the Turbo Flash Spiral scanning up to 737 mm/s, the diagonal z-Sharp technology, Dual Energy with Selective Photon Shield II and a range of proven CARE solutions from the Adaptive Dose Shield to X-CARE.

The 78 cm large bore, the 200 cm scan range - with patient weight up to 307 kg (676 lbs) (opt.) - and the 200 kW generator power, it can scan most acute patients independent of size or condition, helping to save precious time from scan to diagnosis.

It's Ultrafast rotation time of 0.25 sec. (optional) leads to acquired (not reconstructed) 66 ms temporal resolution to freeze any cardiac motion even in high and irregular heart rates.

The optional Dual Source Turbo Flash Spiral mode acquisition of 2 x 192 x 0.6 mm allows for increased scan speed up to 737 mm/s e.g. for pediatric head or chest CT scans or routine sub-mSv heart examinations in patients with stable/low heart rate and a weight of up to 90kg.

- Vectron tubes with diagonal z-Sharp Technology

The two Vectron sources provide cooling through an water-chilled e-catcher, closely mounted to the rotating anode, for direct cooling of the anode
Utilizing the Turbo Flash Spiral scanning technology in combination with Siemens' own diagonal z-Sharp Technology it routinely enables the industry's highest isotropic, scan field position and pitch independent spatial resolution. This allows a highly beneficial combination of exceptional image detail and unmatched sub-millimeter volume coverage of 737 mm/sec enabling whole body examinations within sub-seconds and seconds, even without the need for breath hold - adapting to challenging patients such as poly-trauma and incautious or uncooperative patients, leading to an improvement in image quality (e.g. minimized motion artifacts) and patient comfort (e.g. no breath hold.).

In addition, the Vectron Tubes are equipped with the Adaptive Dose Shields world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan.

- Stellar Infinity detector

The revolutionary Stellar detector, is designed to minimize electronic noise using Siemens' innovative TrueSignal technology. It thus significantly improves the signal-to-noise-ratio (SNR). In combination with Siemens' proprietary UFC scintillator the SOMATOM Force acquires 2 x 192 slices per rotation at outstanding dose efficiency.

Herein the new Stellar Infinity detector hardware minimizes electronic noise and cross-talk, through its TrueSignal technology.

By further applying Edge Technology the spatial resolution can now be increased to an unprecedented 0.30 mm (16.7 lp/cm) in daily clinical routine, which makes it finally suitable for clinical practice as the signal-to-noise ratio is adequate without an additional increase in dose.

In combination with UHR (optional), it delivers a slice width of unprecedented 0.4 mm allowing visualizing extremely small anatomical structures with exceptional quality, for example the complex inner-ear bones,.

- Power Generator

The generator power of up to 2 x 120 kW delivers sufficient resources for every clinical challenge and

Description

thus helps to acquire exceptional image quality and save precious time from scan to diagnosis.

- Patient table

The patient table with a scan range of up to 200 cm and a load capacity of up to 307 kg / 676 lbs. (optional) in combination with the 78 cm gantry diameter of the SOMATOM Force virtually adapts to any patient independent of size or condition thus helping to avoid patient exclusions.

- FAST CARE

With Siemens' unique FAST CARE platform, the SOMATOM Force 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. For example FAST Spine automatically labels all vertebrae and discs after the data acquisition and prepares typical reconstruction ranges rapidly in spine examinations.

- **The World's First FAST Integrated Workflow** (opt.)

We combine our market leading applications to make positioning simple for our customers.

The FAST 3D camera captures the patient's shape, position, and height in three dimensions.

Using infrared measurement, it even recognizes body contours: for example, when people are wearing masking clothes or blankets.

The 3D camera is equipped with an infrared light source and sensor as well as an RGB camera. It is positioned above the patient table and in front of the gantry.

A live image of the patient is displayed on the Touch Panel and a planning image can be taken and displayed.

Algorithms use the measured data to calculate:

- The body regions in z-direction
- The patient's direction – "head-first versus feet-first" as well as "prone versus supine"
- The table height and patient thickness

Specialized applications support accurate and reproducible positioning:

- **FAST Isocentering**, at the push of a button, provides the correct isocenter position, enabling the right dose modulation and consistent images.
- **FAST Range** supports scanning the correct body region in the topogram with no cut-off – by aligning the automatically identified anatomical position with the protocol.
- **FAST Direction** helps safeguard the right scan direction of the topogram, which is crucial when moving the table with infused patients.

The 3D camera system consists of several components.

- Ceiling flange: The ceiling flange covers the fixation to the concrete or suspended ceiling.
- Ceiling extension: The length of the ceiling extension is variable to allow an installation of the 3D camera at different room heights.
- Camera Interface Computer (CIC): The computer is connected to the 3D camera and the syngo Acquisition Workplace.
- 3D camera: The camera is used to get the data of the patient structure in three dimensions.

FAST Topo - enables faster scan speeds in topograms, which minimizes breath-hold artifacts. It also has the potential to decrease the topogram dose.

FAST Planning - assists the scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning. FAST Planning features the selection of the anatomical region of interest from a list prospectively defined scan and reconstruction ranges, automatic detection of the scan region(s) of interest and proposal of corresponding scan range(s) in the topogram (in a narrow or wide lateral FoV), optimized FoV and automatic iso-center adaptation for Head scans.

FAST 3D Align - automatically corrects misalignment of anatomic structures and organs of the patient. It

Description

aligns those to fit it to the selected reconstruction plane for a highly automated reconstruction workflow. Additionally it minimizes the black area in the image by automatically adjusting the recon field of view.

FAST 3D Align works in combination with Workstream 4D.

- Low Dose with CARE

Siemens has developed many significant products and protocols that follow the "As Low as Reasonably Achievable" (ALARA) principle to reduce radiation dose to the lowest possible level. This desire for as little radiation exposure as possible lies at the heart of our CARE - Combined Applications to Reduce Exposure - research and development philosophy. The SOMATOM Force consequently offers a unique portfolio of dose saving features; many of them being industry's first like the Adaptive Dose Shield, CARE kV or 70kV scan modes. Using Siemens' CARE solutions radiation dose can be significantly reduced compared to conventional CT systems.

Clinical Applications

The SOMATOM Force introduces the third generation of Siemens Dual Source Dual Energy imaging, proven by more than 1.500 installations worldwide and a wide range of clinical publications. With the all-new Selective Photon Shield II and a larger field of view (500 mm FoV visual, 350 mm full Dual Energy FoV), it offers up to 30% increased energy separation.

SOMATOM Force now allows DE scanning with 80 kV/150 kV, 90 kV/150 kV and 100/150 kV with Sn (tin) filtration. Thus is adjusted even for larger patients, all the while the additional diagnostic information of Dual Energy is available without additional dose

Adaptive 4D Spiral

With its unique Adaptive 4D Spiral plus scan mode (optional) the SOMATOM Force overcomes the coverage limitations in dynamic CT imaging when using a static detector and allows for up to 80 cm coverage in dynamic CT imaging. It even enables for 4D CT DSA evaluation.

3D Interventional Suite

In addition the SOMATOM Force optionally offers a built in 3D minimal invasive suite, enabling 3D guided interventions with full control of the radiologist due to the all-new wireless in-room control.

Neuro BestContrast

Neuro head image quality is significantly improved with Neuro BestContrast, by optimizing grey/white matter differentiation without increase in radiation dose.

HeartView

With the HeartView CT option the SOMATOM Force achieves the industry's lowest heart rate independent temporal resolution of 66 ms. It allows to reliably scan all heart rates - even highest and irregular heart rates (atrial fibrillation), e.g. in acute chest pain evaluation, in coronary visualization, dynamic myocardial stress perfusion imaging and in functional analysis of the heart.

Heart Perfusion

The optional Heart Perfusion mode, for quantitative, dynamic myocardial stress perfusion imaging, is a sequence shuttle mode to dynamically cover up to approximately twice the detector width for myocardial perfusion studies of up to 105 mm, with sufficient temporal resolution of 66 ms even for high heart rates. This it provides sufficient temporal resolution even for high heart rates.

SOMATOM Force

System specification in detail

1. System Gantry and Detector:

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

Patient Table: Standard table (200 cm) or Multi-purpose table (opt.) are available. The standard table consists of:

- Motor-driven table height adjustment from min. 49 cm to max. 92 cm
- longitudinal movement of the tabletop 200 cm in increments of 0.5 mm, positioning accuracy +/- 0.25 mm from any direction
- Horizontal scan range 200 cm

Description

- Control elements on both sides on the front and rear panel of the gantry
- Table height can be controlled alternatively by means of foot switch (2 each on both sides of the patient table)
- Max. table load: 227 kg/500 lbs (optional 307kg/676lbs)
- Table feed speed: 2-800 mm/s
- Distance between gantry front and table base 40 cm, e.g. for convenient positioning of a mobile C-arm between gantry and table or for convenient access during CT-intervention.
- Positioning aids: Positioning mattress, mattress protector, head-arm support (inclusive cushion), tiltable head holders with positioning cushion set, patient restraining system for head fixation, restraining-strap set with body fixation strap that can be directly connected to the patient table top, headrest, table extension with positioning mattress, knee-leg support
- 4 pairs of optional Foot Pedals, available for high capacity table, conveniently allow table lifting and lowering from various positions
- Optional Multi-purpose table: Additional exchangeable table tops for High-capacity patient and trauma table top; RTP table top
- In the case of emergency stop or power failure, the tabletop can also be moved manually in horizontal direction

Scanning system: Adaptive Array Detector (AAD) systems based on UFC with 88,320 elements for measurement system A and 61,440 for system B. 2 x 192 detector electronic channels (DAS) utilized for up to 2 x 192 slices/rotation acquisition, and 1,840 for measurement system A and 1,280 for system B, measuring channels per slice (The measuring system can contain replacement components).

In cases of very low signal at the detector (e.g. when scanning bariatric patients), the Adaptive Signal Boost improves image quality by amplifying individual pixels based on an analysis of the surrounding image data. It reduces streaks and noise and maintains the correct HU values for large patients.

Spiral acquisition modes: 192 x 0.6 mm, 64 x 0.6 mm, 40 x 0.6 mm, 32 x 0.6 mm, 20 x 0.6 mm, 10 x 0.6 mm, 32 x 1.2 mm, 16 x 0.3 mm*, 8 x 0.3 mm*, 16 x 0.6 mm*, 8 x 0.6 mm*.

Sequence acquisition modes 64 x 0.6 mm, 32 x 0.6 mm, 32 x 1.2 mm, 12 x 1.2 mm, 1 x 5 mm, 1 x 10 mm, 8 x 0.3 mm*, 8 x 0.6 mm* (* optional).

The scan field diameter is 50 cm.

Three laser light markers: Horizontal, sagittal, and vertical laser light that shows the isocenter position of the scan plane.

2. Tube Assembly:

Source: The two Vectron sources provide cooling through an water-chilled e-catcher, closely mounted to the rotating anode, that significantly reduces extrafocal radiation, for reliable performance when operating two x-ray sources at an ultrafast rotation time of 0.25 sec.

- 2 x Vectron high performance X-ray source
- Tube current range: Single source 20-1.300 mA
- Dual Source 40-2600 mA
- e-Catcher, catching extra-focal electrons off the anode, thus directly cooling the anode through its internal water cooling. - Focal spot size according to IEC 60336: 0.4 x 0.5mm/8°, 0.6 x 0.7 mm/8° and 0.8 x 1.1 mm/8°.
- Computer controlled monitoring of anode temperature
- Multifan principle with new diagonal flying focal spot (diagonal z-Sharp technology)
- 2 x Adaptive Dose Shields with ultrafast blade positioning and movement enabled through SiDaNet (Siemens Data Net Bus technology)

3. Diagonal z-Sharp Technology:

Description

The unique Vectron X-ray source with diagonal z-Sharp technology utilizes an electron beam that is accurately and rapidly deflected, creating two precise focal spots alternating multiple thousand times per second. This doubles the X-ray projections reaching each detector element. The two overlapping projections result in an oversampling in z - direction. The resulting measurements interleave half a detector slice width, doubling the scan information without a corresponding increase in dose. Siemens' Stellar Infinity Detector hardware and the highly integrated 2 x 192-slice detector electronics enable a virtually simultaneous readout of two projections for each detector element - 2 x 2 x 96 slices for every viewing angle - resulting in a full 2 x 192-slice acquisition. Diagonal z-Sharp technology, utilizing the Vectron X-ray sources and the Stellar Infinity detector hardware, provides scan speed independent visualization of 0.33 mm isotropic voxels and a corresponding elimination of spiral artifacts in the daily clinical routine at any position within the scan field.

- 2 x 192-slice acquisition with diagonal z-Sharp technology
- routine 0.5 mm slice with 0.3 mm cross-plane resolution
- 0.4 mm slice with extra-large UHR comb (32 x 0.6 Collimation) (opt.) and a spatial resolution of 32 lp/cm (0.16 mm)
- Industry's highest isotropic and scan field position independent spatial resolution of 0.33 mm voxel size
- Visualization of the smallest anatomical structures with exceptional image quality in complex inner-ear bones, lungs or small sized vessels such as the intracranial, mesenteric and coronary system. Based on that accurate stenosis measurements or stent planning with outstanding precision are enabled.

4. High Power X-ray Generator:

2 microprocessor-controlled, low-noise high-frequency generators with integrated, automatic self-testing system for continuous monitoring of operation. Settings: High-voltage range 70, 80, 90, 100, 110, 120, 140 and 150 kV; power max. 2 x 120 kW (depends on clinic network) - for no compromises in obese imaging - adjustable in fine steps. The kV are automatically pre-selected through CARE kV in finest 10 kV steps based on patient body habitus and examination type for lowest possible dose at constant signal to noise ratio (image quality). The generator can maintain very high tube current (up to 2 x 1.300 mA) even during low-kV imaging thus allowing to benefit from radiation dose or contrast media concentration reduction - from pediatric to adult patients. ***"Early clinical experience based on imaging of the left ventricle and aortic root (TAVI studies) demonstrate that a reduction of contrast media administration may be possible using SOMATOM Force's Turbo Flash Mode and its low kV / High mA capabilities."***

5. Control and Evaluation Unit:

Control box: CT control with patient intercom, user-recordable patient instruction system, 30 automatic patient instruction (API) text pairs are available in nine languages.

syngo Acquisition Workplace: The *syngo* Acquisition Workplace provides an intelligent and reliable workflow for data acquisition, image reconstruction and routine post-processing at the CT scanner. Built on the unique *syngo* platform, the *syngo* Acquisition Workplace is intuitive and user friendly. Computer system: High-performance computer with DVI graphics card for fast 3D post-processing. High resolution, flicker free, 19-inch (48 cm) color flat panel display for medical diagnostic applications combining the demanding requirements of medical imaging with the advantages of liquid crystal displays. This display provides a resolution of 1280 x 1024 and has a wide viewing angle, features high contrast even under high ambient light conditions. Display light output stability is enabled by controlled backlight throughout the whole lifetime. Keyboard and mouse, External USB 2.0 devices for data storage are supported

6. CT Image Computer System:

Reconstruction computer for the preprocessing and reconstruction of the CT raw data. The reconstruction computer contains of a cluster of high-performance processors performing the preprocessing and reconstruction of the CT data

External USB 2.0 disks for quick and easy raw data storage are supported

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

Description

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 64 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. 10,000 pre definable examination protocols

7. Cooling System:

Gantry is cooled with a water/water cooling system. An optional split cooling (water/air) is available to reduce reconstruction efforts and costs.

System operating temperature: 18-28°C, 20 - 75 % rel. air humidity (not condensing).

8. syngo User Software:

syngo features an intuitive and thus easy-to-learn user interface developed from prototypes in close cooperation with users. *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 work list via network. DICOM work list: Software module for accepting lists of patient data and exam requirements from a Radiology Information Systems (RIS) via DICOM Get Work list functionality. The program enables very efficient working and enables consistent patient data. In emergency cases, fast registration is possible. Here the system automatically assigns an emergency number which can later be replaced by the actual patient number. The input profile can be designed individually.

Examination card:

The SOMATOM Force is delivered with a large number of predefined examination protocols (e.g. for pediatric applications), making examination planning a very fast and efficient procedure. Example: A three-phase examination of the liver available as independent protocol only needs to be adapted to the patient's individual situation. Each examination is represented pictorially as a so-called "chronicle", which views the individual phases of the examination separately. This has the advantage that the individual phases of the examination can be accessed quickly and selectively and changes to the protocol can be made easily in graphical mode via drag-and-drop using the mouse. With a so-called routine window, it is possible to adapt individual examination parameters, representing a submenu of the essential parameters and giving information at a glance about the parameterization of the examination.

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 simultaneously 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 enabling an effective preview of filming jobs and rewindowing of 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 autofilming process running in parallel to acquisition or reconstruction are also defined with the filming card. Freely selectable positioning of images onto film sheet, configurable image text.

3D card:

Secondary reconstruction calculation: Real-time MPR for real-time reformatting of secondary reconstructions. Slice orientation: coronary, sagittal, oblique and double-oblique. Secondary reconstructions can be determined from the topogram, other MPR views or from a 3D surface reconstruction. Reconstruction with selectable slice thickness.

WorkStream4D with Asynchronous Recon (also possible with Dual Energy Data: FAST DE (opt.):

syngo WorkStream 4D, now also for Dual Energy Data (Called FAST DE) is the standardized workflow guide for confident patient management. Up to 8 pre definable axial, coronal, sagittal and oblique MPR and MIP up to sub mm recon jobs possible. The Asynchronous Recon allows for multiple image reconstructions and reformat, 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. WorkStream4D eliminates manual

Description

reconstruction steps and reduces the data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices.

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.

3D Display: Software for the three-dimensional display of surfaces of a body region from a series of continuous slices, for display and analysis of complex anatomies, e.g. the visceral cranium, pelvis, hips, for the purpose of planning surgical interventions. The 3D objects can be tilted and rotated interactively on the monitor and can also be displayed in relation to multiplanar reconstruction (MPR).

Volume card: Volume scans of tissues and organs, based on a "region-growing" algorithm and interactive ROI definition.

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.

Additional task cards available as an option.

9. Examination and Evaluation Functions:

Topogram: scanning perspectives: a.p., p.a., lat.; length of scan field: 128 - 2000 mm; width of scan field: 512 mm, 2.0 - 21 s. The topogram can be switched off manually when the desired examination length is reached.

Scan field size: 50 cm. Rotation times (360°): 0.25 s (opt.), 0.285, 0.33, 0.5, 1.0 s.

Slice thickness in sequence: 0.4 (UHR*), , 0.5, 0.6, 0.75, 1.0, 1.2, 1.5, 2.0, 2.4, 3.0, 4.0, 4.8, 5.0, 6.0, 7.0, 7.2, 8.0, 10.0, 14.4, 15.0, 20.0 mm (* optional).

The Dynamic Multiscan allows continuous sequence scanning without table movement for fast dynamic contrast studies with maximum slice thickness of 57.6 mm. Scan times (full scan) 0.25 (opt.), 0.285, 0.33, 0.5, 1.0 s.

Slice thickness in spiral: 0.4 (UHR*), 0.5, 0.6, 0.75, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 10.0 mm (* optional) real-time image display.

Real-time image display for immediate image preview when every second counts. 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 possible. Max. scan time 100 seconds with full low-contrast resolution. Volume length ~ 197 cm with full low-contrast resolution (max. 200 cm scan range possible using multiple automatic ranges). Selection of the pitch factor between 0.35 and 3.2 depending on scan mode. Selection of up to 33 free definable scan ranges per protocol and individual anatomic sections can be successively combined and then scanned automatically. In addition individual anatomic sections can be successively combined and then scanned automatically. Storage of up to 10,000 examination protocols. Rotation times/cycle (360°): 0.25 s (opt.), 0.285, 0.33, 0.5, 1.0 s.

Dynamic Multiscan spiral examination without table feed: Continuous multirotational data acquisition in one slice position with up to 100 scans in uninterrupted, continuous sequence without table feed. Scan cycle time: 0.75 - 60 seconds with quantitative evaluation and graphical display of time-density curves.

Adaptive 4D Spiral (optional): Continuous multirotational data acquisition with continuous smooth bi-directional table movement for quantitative evaluation and graphical display of time-density curves over entire organs. It facilitates volume perfusion studies in head (Stroke) and body applications (e.g. liver, kidneys, etc.) for a perfusion

Description

range of up to 22 cm. Moreover it allows dynamic studies up to a scan range of 80 cm, e.g. after aortic stent graft operation or for dynamic vascular (filling) studies of the peripheral vessels.

The intelligent algorithm Neuro BestContrast improves native head image quality especially grey/white matter differentiation. Images are decomposed into high and medium/low spatial frequencies. While relevant tissue information is contained in medium and low frequencies noise is dominated by high frequencies. Separate processing of medium and low frequency information improves the tissue contrast without amplifying image noise resulting in a better signal to noise ratio.

Image reconstruction and storage: Image reconstruction in full resolution (512 x 512 matrix) takes place during the examination, with full cone beam reconstruction, diagonal 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 64 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 full cone beam reconstruction and diagonal z-Sharp Technology).

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.

10. Network Module:

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, Work list, Storage Commitment, MPPS (Modality Performed Procedure Step).

11. Integrated CARE Solutions:

UFC based Stellar Infinity Detector: Dose reduction compared to conventional CT detectors. High efficiency for low mAs requirements enable best possible image quality with low patient dose at increased resolution and ~50% increased z-coverage, in comparison to Definition Flash

The new and ultra-fast Adaptive Dose Shield, powered by SiDaNet (Siemens Data Network Bus): world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan and newly also in Perfusion scans, such as the Adaptive 4D Spiral for significant additional dose reductions. Both tubes are equipped with an Adaptive Dose Shield, that is controlled and positioned through SiDaNet, and X-CARE, allow to reduce direct peripheral exposure in Spiral CT for the most dose-sensitive body regions while preserving constant

Description

high image quality e.g. the breast during a chest CT exam or the eye lenses during neuro CT exams. Adaptive Dose Shield becomes now also available for 4D dynamic imaging through ultrafast blade drives and the fast control of SiDaNet bus communication.

X-CARE: Partial scanning to reduce direct X-ray exposure for the most dose-sensitive body regions, e.g. the breasts, thyroid gland or eye lens.

Turbo Flash Spiral scanning: Ultra-fast spiral scanning in Dual Source mode with up to 737 mm/s, allows for additional dose saving especially in ECG-triggered scans*, e.g., cardiac or chest scanning (* optional)

CARE Dose4D uses at first an automated adjustment of the dose level depending on patient size based on the attenuation values obtained from the standard (singular) topogram along the patient z 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. It delivers significant x-ray dose reduction for all body regions scanned compared with standard sequence or spiral scanning;

The projections are evaluated per second to optimize the mA level instantaneously. In combination with the extreme adjustment speed of the tube current, CARE Dose4D enables consistent high quality images in every anatomical position. Thinner axial slices and/or longer scan ranges become possible because of reduced tube loading; It also enables ultra-low dose examinations for pediatric patients.

CARE Filter: Specially designed X-ray exposure bow-tie filter installed at the tube collimator. Dose reduction with optimized image quality. Additional protocol dependent bow-tie filtration e.g. cardiac and pediatric body protocols.

CARE kV

Industries first automated, exam-specific voltage setting to optimize contrast-to-noise-ratio and significantly reduce dose.

Pediatric Protocols: Special examination protocols with 70 and 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.

12. IT Security:

The scanner comes with IT security features including:

- Whitelisting based on e.g. Microsoft Device Guard
- Secure Configuration and Hardening

In order to keep the system safe regular deliveries of Service Packs are deployed, typically via SRS. Also, Service Packs will be deployed in case of a security incident, typically via SRS.

Deployment of Service Packs will be discontinued when a new software version becomes available.

For more information please contact your local sales representative

13. Siemens Remote Service:

Siemens Remote Service (SRS) enables 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 can be ordered for all service agreement customers:

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.

Notes on software use: Use of the entire integrated software, including optional software programs, is restricted exclusively to the application with this system.

Note: This product is in compliance with IEC60601-1-2 and fulfills CISPR 11 Class A. Note: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate

Description

measures.

14. The Welcome Package

The package contains a welcome letter, three current versions of the customer magazine SOMATOM Sessions, three Siemens Mouse Pads, pens and an e-Learning CD

The computer keyboard, insulated hose pipe for the water cooling and electrical cable set are part of the basic configuration and will be delivered with every system. Your local Siemens Project Manager will contact you for the details of the needed configurations.

System operating temperature (outside the building): -30°C to 50 degree C, 0-100% rel. humidity (not condensing), Ideal for high distance installation (scan room).

Cooling system contains two units (indoor + outdoor unit):

1. water/water exchanger close to the scan room and
2. an additional remote water/air exchanger

The indoor unit of the cooling system may be up to 30m away from the gantry with a height difference of not more than +10m. Additional hoses for 10m and 20m distance are available to extend the distance between the CT gantry and the indoor unit to 50m.

If the distance between the cooling-system and the gantry is longer than 50m an optional additional pump unit is needed.

Standard distance between water/water unit and remote water/air exchanger is 40m with a height difference of not more than +20m. For longer distance between water/water unit and remote water/air exchanger the tube diameter must expand or an optional additional pump is needed.

The Multi-Purpose patient table supports up to 200 cm scan range. Motor-driven table height adjustment from min. 55 cm to max. 94,5 cm, longitudinal movement of the tabletop 200 cm in increments of 0.5 mm, positioning accuracy (horizontal) is +/- 0.5 mm. The accuracy of the repositioning (horizontal) is specified as +/- 0.25 mm. Table height can be controlled alternatively by means of foot switch (2 each on both sides of the patient table). In the case of emergency stop or power failure, the tabletop can also be moved manually in horizontal direction. Max. table load: 227 kg/500 lbs (with bariatric table top up to 307 kg/676 lbs); table feed speed: 1-800 mm/s; distance between gantry front and table base 35 cm.

The included Physiological Measurement Module allows connecting a 3 channel ECG cable (included) for ECG controlled cardiac acquisition. Also includes a wide range of positioning aids, including a tiltable head holder.

Innovating for the Patient, as every patient is different they need their own distinct parameters. With the SOMATOM Force we combine our market leading applications to make this the most distinct scanner for our customers.

Including:

SureView - Siemens unique pitch independent dose solution

Turbo Flash Spiral - Fast spiral scanning mode with up to 737 mm/s, reducing motion artifacts.

Adaptive Dose Shield - world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan.

CARE Dose 4D - uses at first an automated adjustment of the dose level depending on patient size based on the attenuation values obtained from the standard (singular) topogram along the patient z 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. It delivers significant x-ray dose reduction for all body regions scanned compared with standard sequence or spiral scanning; Projections are evaluated to optimize the mA level instantaneously. In combination with the extreme adjustment speed of the tube current, CARE Dose4Denables consistent high quality images in every anatomical position. Thinner axial slices and/or longer scan ranges become possible because of reduced tube loading; it also enables ultra-low dose examinations for pediatric patients.

CARE kV – The first automated, organ-sensitive voltage setting tool to improve image quality and contrast-to-

Description

noise-ratio while optimizing and potentially reducing dose.

CARE Child - Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and Pediatric Protocols - Special examination protocols with 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 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 to analyze and manage the dose to be applied in the scan

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.

Dose MAP - Siemens unique solution to support dose monitoring, protocol management and benchmarking

FAST Adjust - assists the user to handle system settings in a fast and easy way by automatically solving conflicts within user defined limits by a 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.

The Imaging Advanced Package combines:

ADMIRE - (Advanced Modeled Iterative REconstruction) offers significant dose reduction and image quality improvement, as well as an everyday suitability. Superb details, delineation and sharp organ borders and positive impact on image quality. Dose and Image Quality benefits also in thick slice reconstructions, which facilitates a PACS-ready workflow. Reader-ready reconstructions deliver the desired image impression on the fly.

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

CARE Contrast supports the consistent application of contrast media protocols on the scanner. Saving and linking contrast protocols to scan protocols is available in the Examination card or as part of the scan protocol manager.

X-CARE

Partial scanning to reduce direct X-ray exposure for the most dose-sensitive body regions, e.g. the breasts, thyroid gland or eye lens.

Innovating for the Radiologist, as every patient is different, Radiologists also vary, and they have their own distinct reconstruction and imaging requirements. With the SOMATOM Force we combine our market leading applications to make reporting consistent, fast and simple for our customers

Includes:

VRT - Volume Rendering Technique standard on the 3D card.

Workstream 4D - the standardized workflow guide for confident patient management. Up to 8 pre definable axial, coronal, sagittal and oblique MPR and MIP recon jobs possible. The 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. WorkStream4D eliminates manual reconstruction steps and reduces the data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices.

Extended FoV - allows you to capture more information in just one exam, saving valuable time with emergency patients. Up to 78 cm field of view.

Description

We combine our advanced applications to make reporting of complex and atypical anatomical structures faster and simpler.

This item includes:

iMAR #AWP

The iMAR metal artifact reduction algorithm combines three successful approaches (beam hardening correction, normalized sinogram inpainting and frequency splitting). This reduces artifacts caused by metal implants such as coils, metal screws and plates, dental fillings or implants. iMAR is compatible with extended FoV, the extended CT scale as well as the latest dose reduction features.

The iMAR 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 splitting (to mix back in noise texture and sharp details that are potentially lost during inpainting).

The correction process is then iteratively refined by repeating the normalized sinogram inpainting and the mixing steps thanks to the Adaptive Sinogram Mixing.

Along with the new algorithm comes a simple user interface for iMAR enabling easy reconstruction of clinical images with reduced metal artifacts. Besides the typical reconstruction parameters it only requires the user 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.

FAST Spine #AWP

Accurate and anatomically aligned preparation of spine recons with just a single click.

FAST Spine provides various modes that automatically create anatomically orientated spine reconstructions based on a 3D volume. It provides an easier, faster and standardized workflow in CT scanning. FAST Spine features automatic segmentation of the spinal canal, automatic labeling of the vertebrae, anatomically oriented slices - (orthogonal to the spinal canal), coronal and sagittal reconstructions which refer to the curvature of the spinal column and more. All modes offer the possibility to adapt the results manually.

HD FOV Pro #AWP

Software program with special reconstruction algorithms that allow for visualization of objects using a FoV up to 65 cm with an image quality suited for radiation therapy planning.

For radiation therapy settings or radiology environments providing radiation therapy planning (RTP), it is important to visualize areas outside of the regular 50 cm CT scan field with sufficient accuracy to precisely plan the radiation treatment. For this reason, special reconstruction algorithms have been created to allow for visualization of objects/for soft tissue using a FoV up to 65 cm with an image quality suited for RTP (e.g. contour recognition for dose calculation). The image quality for the area outside the standard 65 cm scan field does not meet the image quality specifications shown in the technical data sheet (non-diagnostic image quality). Image artifacts may be common in the area outside the 65 cm HD FoV, depending on the anatomy scanned.

UHR with extra wide comb

The UHR mode, with the wide extra wide UHR-Comb, delivers Ultra High resolution in plane of up to 32lp/cm (0.16 mm) for high defined imaging of small structures such as inner ear or even the lung, joints or fractures of the bone. The UHR Collimation could be increased to 32 x 0.6 mm collimation.

Questions that may arise at the *syngo* CT Workplace can be addressed quickly and efficiently via network PC without having to go to the *syngo* CT Workplace.

Innovating for the Therapy, as every patient is different and they have their own treatment requirements and responses. With SOMATOM Force, we combine our market leading applications, Dual Energy, Cardiac and Dynamic Imaging, to make quantitative scanning and analysis more accessible and simpler to use.

Description

Including:

The syngo Dual Energy Scan with Tin Filter option allows the use of both SOMATOM Force X-ray sources simultaneously at different energies, while the Tin Filter reduces dose and at the same time increases energy separation by blocking unnecessary parts of the energy spectrum. syngo Dual Energy offers the possibility to acquire two spiral data sets simultaneously from a single scan running the tubes at 80/Sn150 kV, 90/Sn150 kV and 100/Sn150 kV (for obese Dual Energy imaging). The results are two data sets with diverse information.

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

FAST DE (DE WS4D) - is a 4D workflow for the Dual Energy data with direct generation of axial, sagittal, coronal, or double-oblique images from standard Dual Energy scanning protocols. The Advantage: the reduction or elimination of time consuming, error prone, manual reconstruction steps and a reduction of data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices.

Heart View – Heart View enables ECG controlled data acquisition and image reconstruction.

The package comprises:

HeartView CT option on the syngo Acquisition Workplace console for the ECG-controlled acquisition and reconstruction of artifact free images of the heart.

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 phases of the cardiac cycle at a minimum rotation time of 0.25 s (optional). With prospective ECG-triggered sequence scanning, quick scans are triggered by ECG signals. Retrospective gating is based on a continuous spiral scan with simultaneous ECG recording. The cardiac 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 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-gated, prospectively triggered high-pitch Turbo Flash Spiral for scanning at highest volume coverage can be used for:

- For high speed whole body examinations with up to 737 mm/s scan speed
- For fast thorax scans visualizing the aorta and the coronaries in one scan at very low contrast dose (e.g. for TAVI/TAVR planning)
- Fast whole-body scanning of patients who cannot lie calm for longer time, e.g. geriatric and pediatric patients (latter even w/o the need of sedation)
- For coronary CTA scanning of the heart in a quarter beat with a Dual Source acquisition mode at a temporal resolution of 66 ms, acquired within a single diastolic phase (monophasic) allowing for lowest possible doses down to <1 mSv

With split-second thorax imaging of heart, chest, or both, for ultra-low dose triple-rule-out examinations with a temporal resolution of 66 ms

ECG-controlled imaging techniques are the basis for both the quantification of calcified plaques in the coronary 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). The ECG signal is supplied by an ECG device integrated in the gantry.

Cardiac Best Phase Plus - is a dedicated software which automatically calculates and detects the optimal phase for motion-less coronary visualization. The phase is defined as either end-systole, end-diastole or both time points and is automatically reconstructed.

Also includes the DirectViewing™ tool, used for real time navigation through full volumes of up to 24 heart phases

Description

by using an integrated fast 3D volume viewer, available both on the Examination and Recon subtask card. Furthermore it provides VRT visualization of the coronaries with heart isolation in up to 20 phases within 15 seconds. DirectViewing™ completes the workflow of Cardio BestPhase™ by giving you the flexibility to individually visualize phases for all coronary arteries.

Ca Scoring #AWP scanning - for quick calcium scoring based risk assessment and coronary age calculation (for single user at Acquisition Workplace)

FAST Phase - is an intuitive solution fully integrated in the cardiac workflow for helping to quickly set up complex and usually time-consuming cardiac procedures reliably and repeatedly. By measuring of heart rate and rhythm the system automatically chooses the most appropriate phase of the heart cycle to scan and later to reconstruct based on fully configurable and customizable look up tables. This reduces complexity and helps to standardize cardiac acquisitions by making them more robust and less user-dependent.

The Dynamic Myocardial Perfusion Package contains the scanner and software features necessary to perform dynamic myocardial perfusion evaluations. It includes:

Heart Perfusion Scanning: A dynamic scan mode to visualize ventricular myocardial perfusion for identification of perfusion defects.

syngo Volume Perfusion CT Body for the quantitative 3D evaluation of dynamic CT data of organs and lesions by providing images of blood flow, blood volume, and permeability from one set of dynamic CT images.

syngo Volume Perfusion CT Body – Myocardium for the display and analysis of dynamic CT data of the heart.

Adaptive 4D Spiral applies a continuously repeated bi-directional table movement, moving the patient smoothly in and out of the gantry over the desired scan range. In stroke assessment, it provides the information not just for a limited section of the disease, but for the whole brain. It assures a reliable assessment of the type and extent of cerebral perfusion disturbances. In addition, it facilitates perfusion studies over entire organs in both the head and body. Enabling you to assess the entire extent of disease and visualize the function of potential metastasis. Finally, it enables the visualization and evaluation of complex intracranial vascular structures in separate phases. Arterial and venous phases are captured in a single scan, but can then also be evaluated separately. So you're able to not only delineate aneurysms and other vascular diseases, but also to exclude occlusions of the aortic vessels and assess venous thrombosis.

We combine our market leading applications to make positioning simple for our customers.

The FAST 3D camera captures the patient's shape, position, and height in three dimensions. Using infrared measurement, it even recognizes body contours: for example, when people are wearing masking clothes or blankets.

The 3D camera is equipped with an infrared light source and sensor as well as an RGB camera. It is positioned above the patient table and in front of the gantry.

A live image of the patient is displayed on the Touch Panel and a planning image can be taken and displayed.

Algorithms use the measured data to calculate:

- The body regions in z-direction
- The patient's direction – "head-first versus feet-first" as well as "prone versus supine"
- The table height and patient thickness

Specialized applications support accurate and reproducible positioning:

- **FAST Isocentering**, at the push of a button, provides the correct isocenter position, enabling the right dose modulation and consistent images.
- **FAST Range** supports scanning the correct body region in the topogram with no cut-off – by aligning the automatically identified anatomical position with the protocol.
- **FAST Direction** helps safeguard the right scan direction of the topogram, which is crucial when moving the table with infused patients.

Description

The 3D camera system consists of several components.

- Ceiling flange: The ceiling flange covers the fixation to the concrete or suspended ceiling.
- Ceiling extension: The length of the ceiling extension is variable to allow an installation of the 3D camera at different room heights.
- Camera Interface Computer (CIC): The computer is connected to the 3D camera and the syngo Acquisition Workplace.
- 3D camera: The camera is used to get the data of the patient structure in three dimensions.

FAST Topo - enables faster scan speeds in topograms, which minimizes breath-hold artifacts. It also has the potential to decrease the topogram dose.

FAST Planning - assists the scan and reconstruction planning, based on a topogram, to provide an easier, faster and standardized workflow in CT scanning. FAST Planning features the selection of the anatomical region of interest from a list prospectively defined scan and reconstruction ranges, automatic detection of the scan region(s) of interest and proposal of corresponding scan range(s) in the topogram (in a narrow or wide lateral FoV), optimized FoV and automatic iso-center adaptation for Head scans.

FAST 3D Align - automatically corrects misalignment of anatomic structures and organs of the patient. It aligns those to fit it to the selected reconstruction plane for a highly automated reconstruction workflow. Additionally it minimizes the black area in the image by automatically adjusting the recon field of view.

FAST 3D Align works in combination with Workstream 4D.

The Adaptive 3D Intervention Suite contains

Adaptive 3D Intervention is a built-In 3D minimal noninvasive solution for spiral and sequential CT guided interventional procedures. It allows for 3D volume intervention - near to real-time interventional CT Imaging with coronal/sagittal/oblique images. It also allows for switching scan modes on the fly during intervention.

Additionally, an interventional 3D toolbar is available supporting *syngo*® 3D tools, Path Planning, to navigate the needle cautiously during the intervention including:

- Auto Needle Detection
- Switch between patient oriented view and needle oriented view
- i-NeedleSharp to avoid needle artifacts during an sequential intervention. i-needle sharp can be switched on and off.(available on tiltable gantries)

Intervention Pro supports spiral and sequential non- fluoroscopic interventional procedures and complete organ coverage with maximal flexibility and with minimal single click effort.

Intervention Pro supports spiral and sequential non- fluoroscopic interventional procedures and complete organ coverage with maximal flexibility and with minimal single click effort. It is designed for fast and intuitive non-fluoroscopic interventional procedures such as drainage, biopsies or pain therapy. It also allows for switching scan modes between sequential to spiral mode on the fly during CT intervention.

It contains: 2D Basic interventions, i-Sequence mode, i-Spiral mode, customizable user layouts and interventional toolbars.

i-Fluoro CT allows for ultrafast 2-dimensional interventional fluoroscopic procedures. Fluoroscopic scans are acquired with low dose techniques and displayed in real time (up to 10 frames/s) on an additional in-room monitor. It also allows for switching scan modes on the fly during intervention.

HandCARE™ for i-Fluoro reduces on-line radiation exposure to the user and the patient by switching the radiation off in the upper segment of the 360° tube-rotation. It switches off the x-ray exposure for a 100° angle between three user selectable positions (10:00, 12:00 and 2:00 o'clock). Thus providing a significant dose saving to the operator's hand and to the patient while keeping the image quality constant.

i-Control CT

The interventional control panel (i-Control) supports interventional procedures as independent remote unit. The i-

Description

Control can be attached to the side rails of the table*, or an i-Control trolley*. i-Control Wireless CT module supports interventional procedures as independent wireless remote unit.

Documentation: Images are stored in file system for easy filming and archiving.

Foot switch for radiation release (x-ray).

* Optional

19" Monitor Scope of delivery and functions: High-resolution, flicker-free monitor with 48 cm (19 in) flat screen, 1280 x 1024 resolution,. The max. depth of the monitor is only 111 mm. Display suitable for medical diagnostic applications

The Dual Monitor cart consists of: Equipment cart with installation kit, voltage supply, video transmitter, video receiver, power supply cable and a 30 m fiber-optic cable set protected with spiral wrap for connecting the flat screen monitor. The monitor cart can be used for one or two monitors.

Eaton Surge Protective Device (SPD) Panel, 250kA per phase rating, 277/480VAC Wye, Three Phase (4W+G), Surge Counter, Dimensions 12.05"H x 7.47"W x 6.69" D, Weight: 13.5 lbs, 10 Year Limited Warranty

ngo.via - Upgrades and Options for Installed Base VB10

Description

syngo.CT Cardiac Function - Enhancement is an extension of the CT Cardiac Function workflow step that allows visualizing hypodense and/or hyperdense myocardial areas within CT datasets acquired with Single or Dual Energy* CT.

- Dedicated button for **First Pass Enhancement**: Single-click identification of hypodense areas within the myocardium by color-coding
- Dedicated button for **Late Enhancement**: Color-overlay helps to visualize hyperdense areas with a single click
- Color overlay can be turned on/off at any time
- Offering the **full spectrum of myocardial perfusion analysis**: First pass enhancement (Single and Dual Energy*), dynamic quantitative perfusion**, late enhancement (Single and Dual Energy*)
- Overlay of myocardial perfusion information on MPRs
- AHA-conform **17 segment polar maps** for all types of perfusion data
- Straightforward localization of myocardial enhancement defects
- Visualization of all types of perfusion data with the **Hybrid View** facilitating the analysis of the correlation of a defect with the coronary arteries - for a quick assessment of the hemodynamic relevance of a stenosis

* Requires at least one user license of *syngo.CT DE Heart PBV*

** Requires *syngo VPCT Body - Myocardium*

CT Vascular Analysis - Autotracer is an option for the CT Vascular Analysis workflow module that allows automatic vessel centerline extraction and anatomical labeling of the main vessels, even before the case is opened for review. When the case is opened, all major vessels are already segmented and anatomically labeled. The first vessel is prepared in CPR view and the cross-sectional cuts are displayed for immediate evaluation. It is prerequisite for fast and efficient rule-out of atherosclerosis or severe stenosis in less than a minute while making possible a full vascular assessment in less than four minutes.

syngo.CT Lung CAD is a computer-aided detection tool designed to assist radiologists in the detection of solid pulmonary nodules during review of multi-detector computed tomography (MDCT) examinations of the chest. All *syngo.CT Lung CAD* findings are presented directly in the Mini-Toolbar, located in the image segment, which facilitates reviewing and reporting of CAD-marks for regions of interest (ROI) that may have been initially overlooked. *syngo.CT Lung CAD* is an option for *syngo.CT Segmentation* or the *CT Oncology Engine (syngo.CT Segmentation included)*.

Alternatively to reviewing Lung CAD results in *syngo.via*, Rapid Results Technology sends preprocessed Lung CAD results to the PACS, thus eliminating manual steps and providing advanced visualization results - ready for reading directly in the PACS.

The software is an adjunctive tool and is intended to be used as a second reader tool after the initial read has been completed.
