

SAN JUAN WHSE FC6001

V.A. Medical Center

CHIEF, A&MMS (90)

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SAN JUAN, PR 00921-3201

672-FC6001

**Qty**

**Item Description**

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**SOMATOM Definition Flash**

The SOMATOM Definition Flash contains the Stellar Detector, including TrueSignal and Edge Technology. Both take 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.

Besides, it enables reduction of dose for all scans, resulting in for example sub-mSv cardiac imaging. Dual Energy automatically provides a second contrast for the best possible diagnosis without any extra dose.

FAST CARE technology simplifies time-consuming/complex procedures for more reproducible and quicker results. The CARE features continuously reduce radiation dose to the lowest achievable minimum in every scan from pediatric to bariatric imaging - while preserving the image quality.

The SOMATOM Definition Flash - the scanner that is able to scan:

- the heart routinely below 1 mSv, without the need to apply heart rate control
- patients without the need for breath hold
- pediatric patients without the need for sedation
- thorax/heart/abdomen in about 0,6 s at a dose of <5 mSv
- patients with metal implants, removing artefacts with iMAR (opt.)
- at 75 ms temp. resolution for all heart rates (even atrial fibrillation) (opt.)
- all organs for dynamic perfusion imaging (whole organ coverage) (opt.)
- Dual Source Dual Energy scans without dose penalty
- the heart in dynamic myocardial stress perfusion (quantitative) (opt.)
- the heart in Dual Energy mode (opt.)
- obese patients up to 307 kg (opt.) with 78 cm bore and 2 x 100kW
- at 54 - 60% lower dose with iterative recon (SAFIRE) at an unprecedented recon speed and ADMIRE (opt.)

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**FAST CARE Platform**

Siemens' unique FAST CARE platform 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 clinical outcome by creating reproducible results, making diagnosis more reliable and reducing patient burden through streamlined examinations. Siemens' desire for as little radiation exposure as possible lies at the heart of the CARE - Combined Applications to Reduce Exposure - research and development philosophy offering a unique portfolio of dose saving features, many of them being introduced as industry's first.

Qty	Item Description
1	<p><b>CARE Child</b></p> <p>Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols</p>
1	<p><b>FAST Planning #AWP</b></p> <p>Direct, organ-based setting of scan and recon ranges for a faster and more standardized workflow</p>
1	<p><b>FAST Spine #AWP</b></p> <p>Accurate and anatomically aligned preparation of spine recons with just a single click.</p>
1	<p><b>FAST 3D Align #AWP</b></p> <p>FAST 3D Align enables automated alignment of FOV, adjustments and reconstructions of standard views.</p>
1	<p><b>iMAR #AWP</b></p> <p>With iMAR, iterative Metal Artifact Reduction, Siemens offers metal artifact correction on a completely new level. The algorithm combines all three successful approaches: beam hardening correction, normalized sinogram inpainting, and frequency split. No matter if the artifacts are caused by implants such as i.e. dental fillings, screw, plates or prosthesis, iMAR helps to boost the image quality. The outcome is clinical images that are on a completely new level.</p>
1	<p><b>DoseMAP</b></p> <p>DoseMAP - Siemens CT Dose Management Program - creates transparency in dose values and makes it possible to assess the dose situation</p> <p>DoseMAP provides functionalities like CARE Analytics to report, document and analyze dose. It lets the user access dose values per case, per examination type, or per patient.</p> <p>DoseMAP may also help to protect our patients from over radiation - thanks to its alert function that warns the operator in case set dose thresholds are exceeded.</p> <p>Additionally, to protect the set dose levels, access to scan protocols can be restricted to prevent unauthorized changes to the scan parameters</p>
1	<p><b>ADMIRE #AWP</b></p> <p>ADMIRE (Advanced Modeled Iterative REconstruction) is the next generation of Iterative Reconstruction.</p> <p>ADMIRE offers on the fly powerful dose reduction, excellent image quality and everyday suitability.</p> <p>Other unique qualities of ADMIRE are:</p> <ul style="list-style-type: none"> <li>• Superb details, delineation and sharpness of organ borders</li> <li>• Positive impact on the image quality of e.g. streak artifacts in the shoulder region</li> <li>• Thick slice reconstruction allows for PACS-ready workflow</li> <li>• Reader-ready reconstructions deliver the desired image impression on the fly</li> </ul> <p>Due to the computer power of the new Image Reconstruction System (IRS), ADMIRE has a potential to lower radiation, improve organ delineation and to offer a routine-ready performance.</p>
1	<p><b>X-CARE</b></p> <p>Partial scanning to reduce direct X-ray exposure for the most dose-sensitive body regions, e.g. the breasts, thyroid gland or eye lens</p>
1	<p><b>Cooling System Water/Air #split</b></p> <p>Water-to-air heat exchanger for the dissipation (to the air outside) of heat, generated in the gantry.</p>
1	<p><b>Trafo for cooling system water/air</b></p> <p>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</p>

Qty	Item Description
	transformer is needed.
1	<b>Service Switch</b> Service switch to shut off the outdoor cooling unit for maintenance or in case of emergency
1	<b>Patient Restraint 400 mm</b> 400 mm wide restraint strap for the safe positioning of even obese patients on the patient table.
1	<b>Head Holder</b> Head holder for the fixation of the patient's head in combination with the cushion set.
1	<b>Extended Field of View</b> Software program with special reconstruction algorithms that allow for visualization of objects using a FoV up to 78 cm (non-diagnostic image quality). License to use software on a single unit.
1	<b>syngo Dual Energy Scan with SPS</b> The syngo Dual Energy Scan with SPS (Selective Photon Shield) option allows the use of both SOMATOM Definition Flash X-ray sources simultaneously at different energies, while the Selective Photon Shield 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 80/140 kV or 100/140 kV. The results are two data sets with diverse information.
1	<b>FAST DE (DE WorkStream 4D)</b> FAST Dual Energy (DE) 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 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.
1	<b>FAST DE Results #AWP</b> With FAST DE Results you can select Dual Energy applications at the AWP and the results will be sent directly to the PACS for a straight forward Dual Energy workflow.
1	<b>Multi Purpose Table Flash</b> The Multi Purpose table is especially designed for multi disciplinary use, while still enabling ultra-fast spiral scanning up to 400 mm/s (458 mm/s with HeartView Flash). It's flexible design allows to exchange table tops for routine radiology, Trauma or bariatric use.
1	<b>Physiological Monitoring Module</b> The Physiological Measurement Module allows to connect a 3 Channel ECG cable for ECG controlled cardiac acquisition.
1	<b>ECG Cable IEC2 #D</b> ECG cable, IEC2 (AHA/US color coding).
1	<b>High Cap. Patient &amp; Trauma Tab.Top</b> 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	<b>High Cap. Patient &amp; Trauma Acc Kit</b> 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	<b>Mattress for Bariatric Table Top</b> 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.

Qty	Item Description
1	<p><b>Advanced radiotranslucent ECG ext.</b></p> <p>A dedicated advanced radio translucent ECG (Electrocardiogram) extension to be used for state-of-the-art ECG cardiac scanning without compromises. These carbon fiber extensions are designed for metal artifact-free cardiac imaging especially for small children and babies.</p>
1	<p><b>Mattress with Spill Protection</b></p> <p>This mattress is ideal for trauma and acute care settings. The mattress has wide flaps and offers additional protection by preventing liquids spilling into the table by covering the gaps between table top and the table base.</p>
1	<p><b>Table Side Rails</b></p> <p>Side rails enable the quick and easy attachment of additional accessories such as an infusion bottle holder and i-control intervention module to the standard patient table.</p>
1	<p><b>Pediatric Cradle</b></p> <p>Dedicated mattress for safe and easy positioning and fixation of babies or infants during a scan.</p>
1	<p><b>syngo Expert-I #AWP</b></p> <p>Expert-i enables the physician to interact with the syngo CT Workplace from virtually anywhere in your hospital.</p>
1	<p><b>Adapt. 3D Intervent. Suite Wireless</b></p>
1	<p><b>Dual 19" Monitor #D</b></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><b>Large Cover f.Ceiling Support Base</b></p> <p>In case monitor ceiling support requires very large openings in the ceiling, the larger ceiling support cover can be used in order to cover the wider base or if the ceiling support base will be mounted at the concrete ceiling without intermediate ceiling.</p>
1	<p><b>Dual Monitor Ceiling Support</b></p> <p>The dual monitor solution enables access to images and scan data while interacting with the patient in the scan room. The high resolution, flicker free, 19-inch (48 cm) color flat panel displays are mounted at the ceiling support.</p> <p>The space-saving ceiling installation along with the large movement range of the support allow maximum operating convenience when positioning the monitor.</p> <p>19" flat screen monitor (2x)</p> <p>The 19" monitors support CT interventions and CT fluoroscopy with a display in the examination room.</p> <p>Dual Monitor Ceiling Support</p> <p>The Dual Monitor Ceiling support consists of: video transmitter, video receiver, power supply</p>

Qty	Item Description
	cable and a 30 m fiber-optic cable set for connecting the flat screen monitors. Displays suitable for medical diagnostic applications (room class 1 and 2 acc. To DIN 6868-157).
	<b>Ceiling Support Base</b> Ceiling support for the accommodation and safe installation of one or two flat screen monitors in the examination room.
1	<b>i-Control Trolley</b> Trolley for the i-control CT module
1	<b>syngo Volume Perfusion CT Body#AWP</b> syngo Volume Perfusion CT - Body allows the quantitative 3D evaluation of dynamic CT data of organs and tumors. By providing images of blood flow, blood volume and permeability from one set of dynamic CT images. syngo Volume Perfusion CT Body allows the assessment of perfusion disturbances and perfusion changes during therapy. It might be particularly helpful in the differential diagnosis and monitoring of tumors.
1	<b>Heart Perfusion Scanning</b> Dynamic scan mode to visualize ventricular myocardial perfusion for identification of perfusion defects. Applies sequential technique for minimum dose and 75 ms temporal resolution for scanning even at high heart rates.
1	<b>syngo VPCT Body-Myocardium #AWP</b> The new Myocardium application class of the syngo Volume Perfusion CT Body package allows the display and analysis of dynamic CT data of the heart, acquired after contrast injection with the heart perfusion scanning mode of the SOMATOM Definition Flash. A prerequisite is syngo VPCT Body.
1	<b>Computer Desk, height adjust 110V</b> 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	<b>Computer Cabinet</b> 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	<b>FAST Cardio Wizard</b> On-screen step-by-step guide to cardiac scanning for higher reliability and reproducibility in cardiac CT.
1	<b>Additional User Manual</b> Additional user manual for the above selected CT system.
1	<b>0.33 mm High Resolution</b> SOMATOM Definition Flash provides z-Sharp Technology that enables sub-millimeter volume coverage with a routine isotropic resolution of 0.33 mm voxel size, at highest volume coverage and at any position within the scan field.
1	<b>HeartView Flash</b> Scanning technique and program for ECG controlled data acquisition and image reconstruction with lowest possible dose. Dual Source acquisition mode with single segment reconstruction enables heart-rate independent temporal resolution of 75 ms (factor 2 higher than single source acquisition with same parameter) that allows to reliably scan high heart rates, e.g. in acute chest pain evaluation, in coronary visualization, and in functional analysis of the heart.
1	<b>Cardio BestPhase Plus #AWP</b> Cardio BestPhase, a software dedicated to automatically detect the optimal phase for motion-

**Qty****Item Description**

less coronary visualization. The phase is defined in either end-systole, end-diastole or both timepoints and automatically reconstructed. Includes DirectViewing™, a tool for real time navigation through full volumes of up to 24 heart phases by using an integrated fast 3D volume viewer, available both on the Examination and Recon subtask card. Furthermore it provides easy VRT visualization of the coronaries with removal of all parts of the chest 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.

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**syngo Calcium Scoring CT #AWP**

Dedicated application for the quantification of calcifications in CT images. For best results, CT images acquired with HeartView by ECG-synchronized imaging should be used. The Calcium Scoring software calculates various scores (Agatston score, volume score and calcium mass) to assess the risk of a cardiac infarct within user-defined regions for up to four coronary arteries.

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**Adaptive 4D Spiral**

The unique Adaptive 4D Spiral moves beyond fixed detector limitations to provide full coverage of any organ in 4D. It introduces up to 48 cm range for dynamic CTA imaging and 4D Noise Reduction to significantly improve image quality with no increase in dose or, alternately, reduce dose without compromising image quality (4D Noise Reduction requires Volume Perfusion CT Neuro or Body).

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**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.

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**CT Standard Rigging and Installation**

This quotation includes standard rigging and installation of your CT new system.

Standard rigging into a room with reasonable access, as determined by Siemens Project Management, during standard working hours (Mon. - Fri./ 8 a.m. to 5 p.m.)

It remains the responsibility of the Customer to prepare the room in accordance with the SIEMENS planning documents.

Any special rigging requirements (Crane, stairs, etc.) and/or special site requirements (e.g. removal of existing systems, etc.) is an incremental cost and the responsibility of the Customer.

All other "out of scope" charges (not covered by the standard rigging and installation) will be identified during the site assessment and remain the responsibility of the Customer.

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**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.

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**Initial onsite training 32 hrs GovOffset**

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**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.

Qty	Item Description
1	<p><b>Additional onsite training 32 hours</b></p> <p>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.</p>
1	<b>Low Contrast CT Phantom &amp; Holder</b>
1	<b>Surge Protective Device (SPD)</b>
1	<b>Riedel Chiller Start-up by SBT</b>
1	<p><b>Standard UPS for Definition Flash</b></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><b>Lung Imaging</b></p> <p>For well over a decade, CT has been recognized and used as the standard of care for lung nodule detection and sizing. This is due to CT's spatial resolution, geometric accuracy, and ability to create various reconstructions and 3D views. The high contrast environment in the chest between the lungs and the nodules makes for a relatively easy detection task for clinicians using CT images. Recent advances in CT technology have allowed these scans to be effectively performed at lower doses, higher resolutions, and faster scan times. The SOMATOM Definition AS+ CT is indicated for use in low dose lung cancer screening for high risk populations*. The AS+ is delivered with two specific scan protocols to provide low dose lung cancer screening exams at approximately 1.3 mGy CTDI for a standard size adult. These default protocols utilize Siemens proprietary dose reducing features such as CARE Dose4D(tm), automatic exposure control technology that modulates and adapts dose for every patient, for high image quality at low dose. *As defined by professional medical societies.</p>
1	<p><b>Access Protection</b></p> <p>Scan Protocols are password protected allowing only authorized staff members to access and permanently change protocols</p>
1	<p><b>CARE Profile</b></p> <p>CARE Profile: Visualization of the dose distribution along the topogram prior to the scan</p>
1	<p><b>DICOM SR Dose Reports</b></p> <p>DICOM structured file allows for the extraction of dose values (CTDIvol, DLP)</p>
1	<p><b>DoseLogs</b></p> <p>Whenever a limit exceeds of the set up reference dose levels (Dose Notification and Dose Alert) automatically a report is created on the system</p>
1	<p><b>Dose Alert</b></p> <p>Dose Alert: As requested by the new release of the standard IEC 60601 3rd edition, the SOMATOM Definition automatically adds up CTDIvol and DLP depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.</p>
1	<p><b>Adaptive Dose Shield</b></p> <p>Adaptive Dose Shield for spiral acquisition to eliminate pre- and post-spiral over-radiation.</p>

Qty	Item Description
1	<p><b>CARE Analytics</b></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><b>CARE Dashboard</b></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>
1	<p><b>CARE Dose4D</b></p> <p>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</p>
1	<p><b>Dose Notification</b></p> <p>Dose Notification: As requested by the new release of the standard IEC 60601 3rd edition, the SOMATOM Definition AS 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.</p>
1	<p><b>FAST Adjust</b></p> <p>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.</p>
1	<p><b>FAST Scan Assistant</b></p> <p>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.</p>
1	<p><b>CARE Dose Configurator</b></p> <p>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.</p>
1	<p><b>CARE kV</b></p> <p>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%.</p>
1	<p><b>CT Slicker</b></p> <p>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.</p> <p>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.</p> <p>Includes warranty from RADSCAN Medical.</p>
1	<p><b>Stellant D Dual Ceiling w/Certegra WS</b></p> <p>New Stellant D Dual Ceiling mounted with Certegra Workstation NO Informatics. Short ceiling post - 580 mm.</p> <p>Other ceiling post lengths are available (different part numbers): 850 mm and 1000 mm.</p> <p>Includes Stellant D, Dual Head, ceiling mounted injector; Certegra workstation; installation and warranty through Medrad.</p>



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

Offset Part 14428168 Additional User Manual

Offset Part CT\_ADD\_32 One Additional Onsite Training 32 hours

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**OPTIONS**

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Qty	Item Description
1	<p><b>syngo Volume Perfusion CT Neuro#AWP</b></p> <p>Fully automated 3 dimensional syngo Volume Perfusion CT - Neuro facilitates quantitative 3D volume evaluation for differential diagnosis of ischemic stroke and supports simultaneous multislice processing as well as the stringent time and workflow requirements in an emergency setting where time is of the essence.</p>
1	<p><b>Eaton 9395 275kVA UPS</b></p> <p>PW9395 275kVA Electronics Cabinet, (2) Battery Cabinets with hold over time of 7 minutes @ .9 pf, Single Feed Option is included with the UPS.</p> <p>Start-Up (7x24) and One (1) Year On-Site Parts and Labor coverage (7x24), Plus One (1) Year of remote monitoring provided by Eaton Powerware.</p>
1	<p><b>Maintenance Bypass Panel (MBP).</b></p>

# Detailed Technical Specifications

## SOMATOM Definition Flash

### Description

The SOMATOM Definition Flash is Siemens' state-of-the-art high-end Dual Source CT that provides the possibility to scan with Flash speed for lowest possible dose.

The SOMATOM Definition Flash is founded on the two highly integrated Siemens' Stellar Hardware Detector systems, with two revolutionary STRATON X-ray sources, the Flash Spiral scanning up to 450 mm/s, the z-Sharp Technology, Dual Energy with Selective Photon Shield and a range of proven CARE solutions from X-CARE to the Adaptive Dose Shield.

Using Siemens' z-Sharp technology the SOMATOM Definition Flash can provide the fastest sub-millimeter volume coverage at industry's highest spatial resolution. The high rotation time of 0.28 seconds delivers excellent temporal resolution up to 75 ms independent from the heart rate.

The SOMATOM Definition Flash 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. 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 SOMATOM Definition Flash, with the FAST CARE technology platform, allows you to maximize clinical outcomes - meaning you will have the best possible clinical results, but with significantly less 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 high image quality and high 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 second 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 selective photon shield and the latest technical improvements each scan on the Flash can now become a 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 SOMATOM Definition Flash 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 140 kV for bariatric imaging but now, if necessary, also down to 70 kV for new safety and image quality standards in pediatric imaging. Add SAFIRE, the first, raw-data-based iterative reconstruction (with an FDA approved dose saving potential from 54 - 60%\*), 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 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.

## Description

### The SOMATOM Definition Flash

#### System Overview

- Definition Flash Gantry

The SOMATOM Definition Flash gantry is founded on two highly integrated Siemens' Stellar Hardware Detector systems, with two revolutionary STRATON X-ray sources, the Flash Spiral scanning up to 450 mm/s, the z-Sharp Technology, Dual Energy with Selective Photon Shield 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.

Its Ultrafast rotation time of 0.28 sec. (optional) leads to acquired (not reconstructed) 75 ms temporal resolution to freeze any cardiac motion even in high and irregular heart rates.

The optional Dual Source Flash Spiral mode acquisition of 2 x 128 x 0.6 mm allows for increased scan speed up to 450 mm/s e.g. for pediatric head or chest CT scans without the need of sedation or routine sub-mSv heart examinations in patients with stable/low heart rate and a weight of up to 90kg.

- Straton MX-P tubes with z-Sharp Technology

The two STRATON sources provide direct oil cooling of the anode, eliminating the need for heat storage capacity (0 MHU). The resulting small and compact design (120 mm diameter) enables an unprecedented cooling rate of 7.3 MHU/min as well as the reliable performance when operating two x-ray sources at an ultrafast rotation time of 0.28 sec.

Utilizing the Flash Spiral scanning technology in combination with Siemens' own 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 450 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, no sedation in pediatric patients).

In addition, the STRATON 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 detector

The revolutionary Stellar Detector, the first fully-integrated 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 (Ultra Fast Ceramics) scintillator the SOMATOM Definition Flash acquires 2 x 128 slices per rotation at outstanding dose efficiency.

The new Stellar detector hardware minimizes electronic noise (~20-30%) 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 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 z-UHR (optional), it delivers a spatial resolution of 0.24 mm voxel size, allowing the visualization of extremely small anatomical structures with exceptional quality, for example the complex inner-ear bones, outstanding fine details of the coronary tree or intracranial, pulmonary, mesenteric, renal and peripheral vessels. It also helps to perform accurate stenosis measurements or stent planning with outstanding precision.

- Power Generator

The generator power of up to 2 x 100 kW delivers sufficient resources for every clinical challenge and thus helps to acquire exceptional image quality and save precious time from scan to diagnosis.

- Patient table

## Description

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 Definition Flash virtually adapts to any patient independent of size or condition thus avoiding patient exclusions.

- **FAST CARE**

With the introduction of Siemens' unique FAST CARE platform, the SOMATOM Definition Flash 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 to up to 30 minutes in spine examinations.

- **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 Definition Flash 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 Definition Flash introduces the second generation of Siemens Dual Energy imaging, proven by more than 900 installations worldwide and a wide range of clinical publications. With the Selective Photon Shield and a 25% larger field of view (500 mm FOV visual, 330 mm full Dual Energy FOV), it offers up to 80% increased energy separation and 80/140 kV as well as 100/140 kV modes to adjust even for larger patients, all the while the additional diagnostic information of Dual Energy is available without additional dose (see SOMATOM Flash data sheet; publication list).

#### Adaptive 4D Spiral Plus

With its unique Adaptive 4D Spiral Plus scan mode (optional) the SOMATOM Definition Flash overcomes the coverage limitations in dynamic CT imaging when using a static detector and allows for up to 48 cm or 18.89" coverage in dynamic CT imaging. It even enables for 4D CT DSA evaluation.

#### 3D Interventional Suite

In addition the SOMATOM Definition Flash optionally offers a built in 3D minimal invasive suite, enabling 3D guided interventions with full control of the radiologist due to the 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 Flash

With the HeartView CT option the SOMATOM Definition Flash achieves the industry's lowest heart rate independent temporal resolution of 75 ms. It allows the reliable scan of 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 (dynamic, stress, quantitative)

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 with sufficient temporal resolution of 75 ms even for high heart rates. For a heart rate of 63 beats per minute or less every single heartbeat and for a heart rate of greater than 63 beats per minute every second heartbeat, images were acquired. It provides sufficient temporal resolution even for high heart rates.

### **SOMATOM Definition Flash** System specification in detail

## Description

### 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. 48 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
- 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: 2-458 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), non-tiltable and 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 (ultra fast ceramics) with 47,104 elements for measurement system A and 30,720 for system B. 2 x 128 detector electronic channels (DAS) utilized for up to 2 x 128 slices/rotation acquisition, and 1,472 for measurement system A and 960 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: 128 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 STRATON sources provide direct oil cooling of the anode, eliminating the need for heat storage capacity (0 MHU). The resulting small and compact design (120 mm diameter) enables an unprecedented cooling rate of 7.3 MHU/min as well as the reliable performance when operating two x-ray sources at an ultrafast rotation time of 0.28 sec.

- 2 x STRATON high performance X-ray source
- Tube current range: Single source 20-800 mA
- Dual Source 40-1600 mA

## Description

- Tube anode heat storage capacity 0 MHU
- Cooling rate 7.3 MHU/min (5,400 kJ/min)
- Focal spot size according to IEC 60336: 0.7 x 0.7 mm/7°, 0.9 x 1.1 mm/7°
- Computer controlled monitoring of anode temperature
- Multifan principle with flying focal spot
- 2 x Adaptive Dose Shields

### 3. z-Sharp Technology:

The unique STRATON X-ray source with z-Sharp Technology utilizes an electron beam that is accurately and rapidly deflected, creating two precise focal spots alternating 4,608 times per second. This doubles the X-ray projections reaching each detector element. The two overlapping projections result in an oversampling in z-direction. The resulting measurements interleave half a detector slice width, doubling the scan information without a corresponding increase in dose. Siemens' Stellar Detector hardware and the highly integrated 2 x 128-slice detector electronics enable a virtually simultaneous readout of two projections for each detector element - 2 x 2 x 64 slices for every viewing angle - resulting in a full 2 x 128-slice acquisition. z-Sharp Technology, utilizing the STRATON X-ray sources and the Stellar 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 128-slice acquisition with z-Sharp technology
- 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 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, 100, 120 and 140 kV; power max. 2 x 100 kW (depends on clinic network) - for no compromises in obese imaging - adjustable in fine steps. The kV Steps are automatically selected through CARE kV based on patient body habitus and examination type for lowest possible dose at constant signal to noise ratio (image quality).

### 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 1x Xeon QC6700, 2.66GHz, NVIDIA Quadro FX1700 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 ensured by controlled backlight throughout the whole lifetime. Keyboard and mouse, 8 Gbyte RAM, 2 x 146 Gbyte image storage for 260,000 uncompressed images, CD-R 700 MB for 1,100 images. DVD DICOM with 4.7 GB media for 8,400 images. External USB 2.0 devices for data storage are supported (recommended: Iomega 160 Gbyte External Hard Drive Hi-Speed USB 2.0; Maxtor One Touch 160 Gbyte External Hard Drive).

### 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 2,2 GHz dual kernel high-performance processors performing the preprocessing and reconstruction of the CT data with up to 50 images per second.

Recon time (512 x 512 matrix) up to 60 fps with weighted filtered 3D back projection (WFBP) and z-Sharp technology at full image quality.

Up to 20 fps with WFBP and iterative reconstruction (SAFIRE) with z-Sharp technology at full image quality. The raw data memory is 3.8 Tbyte.

## Description

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 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 ensures 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 Definition Flash 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 rewinding 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:

*syngo* Workstream 4D, 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



## Description

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.

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°): 0.28 s (opt.), 0.33, 0.5, 1.0 s.

Slice thickness in sequence: 0.4 (z-UHR\*), 0.5 (z-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 38.4 mm. Scan times (full scan) 0.28 (opt.), 0.33, 0.5, 1.0 s.

Slice thickness in spiral: 0.4 (z-UHR\*), 0.5 (z-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 3.4 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°): 0.28 s (opt.), 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 Plus (optional): Continuous multirotational data acquisition with continuous smooth bi-

## Description

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 range of up to 14 cm/5.51". Moreover it allows dynamic studies up to a scan range of 48.0 cm/18.9", 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 up to 60 images per second, with full cone beam reconstruction, z-Sharp Technology and full image quality. Reconstruction fields of 5 cm to 50 cm through raw data zoom with the possibility of freely selecting the image center either prospectively before each scan or retrospectively. Reconstructions of different slice thicknesses from a single raw data record, e.g. lung soft tissue and lung high-contrast with CombiScan, with simultaneous suppression of partial volume artifacts. Up to 8 reconstructions per scan range can be predefined with the examination protocol. Patient-related storage of the image and raw data.

Image display: 1024 x 1024 display matrix; screen splitting configurable up to 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 up to 40 images/second (with full cone beam reconstruction and 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 Detector: Dose reduction compared to conventional CT detectors. High efficiency for low mAs requirements enable best possible image quality with low patient dose.

Adaptive Dose Shield: world's first dynamic tube collimation that protects the patient from clinically irrelevant radiation in every spiral scan. Adaptive Dose Shield Both tubes are equipped with an Adaptive Dose Shield and X-CARE allows the reduction of direct peripheral exposure in Spiral CT for the most dose-sensitive body regions while preserving constant high image quality e.g. the ovary/breast during a chest CT exam or the eye lenses during neuro CT exams.

## Description

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.

Flash Spiral scanning: Ultra-fast spiral scanning in Dual Source mode with up to 450 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 possible for all body regions scanned compared with standard sequence or spiral scanning; Up to 2,320 projections are evaluated per second to optimize the mA level instantaneously. In combination with the extreme adjustment speed of the tube current, CARE Dose4D ensures consistent high quality images in every anatomical position. 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 increased image quality. Additional protocol dependent bow-tie filtration e.g. cardiac and pediatric body protocols.

### CARE kV

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

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 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. Siemens Remote Service:

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

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

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

SOMATOM LifeNet: An information and service portal directly at the CT Scanner consoles, featuring up to date information on CT products, application guides, accessories and training schedules as well as download of the latest scan protocols and 90 day free trial licenses on available software applications.

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 measures.

Description
<p><b>13. The Welcome Package</b>  The package contains a welcome letter, three current versions of the customer magazine SOMATOM Sessions, CARE Analytics CD (dose analysis and evaluation software), three Siemens Mouse Pads, pens and an e-Learning CD</p>
<p>Siemens has always been at the forefront to deliver highest image quality and reduce radiation dose to the lowest possible level at the same time. But today, an additional barrier has to be mastered to maximize clinical outcome: overcome the growing restrictions and limitation of resources. With FAST CARE, Siemens opens a new chapter in CT, explicitly focusing on the optimization of patient-centric productivity in modern healthcare delivery. With FAST CARE, time-consuming and complex procedures such as scan or recon preparations are extremely simplified – ideally reduced to a single click. The scanning process gets more intuitive and the results become more reproducible.</p> <p>The FAST CARE platform consists the following features:</p> <p>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.</p> <p>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%.</p> <p>CARE Child: Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols</p> <p>CARE Profile: Visualization of the dose distribution along the topogram prior to the scan</p> <p>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</p> <p>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.</p> <p>Dose Notification: As requested by the new release of the standard IEC 60601 3rd editions, the SOMATOM Definition Flash 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.</p> <p>Dose Alert: As requested by the new release of the standard IEC 60601 3rd editions, the SOMATOM Definition Flash automatically adds up CTDIvol and DLP depending on z-position (scan axis). The Dose Alert window appears, if either of these cumulative values exceeds a user-defined threshold.</p>
<p>With Siemens' unique STRATON tubes, the tube voltage can now be reduced to 70kV which helps to reduce radiation exposure to patients. With prior tube technology, the minimum tube voltage setting was 80 kV. The new tube voltage setting of 70 kV helps to further reduce the radiation dose to small pediatric or neonate patients.</p> <p>CARE Child consists of:</p> <ul style="list-style-type: none"> <li>- dedicated 70 kV scan modes</li> <li>- new CARE Dose4D curves for children</li> <li>- respective Children Protocol utilizing these features</li> </ul>
<p>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.</p>
<p>Utilizing Siemens unique Workstream 4D functionality, FAST Spine provides various modes that automatically create anatomically orientated spine reconstructions based on a 3D volume. It provides a fast and standardized</p>

## Description

workflow in routine spinal 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.

FAST 3D Align automatically corrects misalignment of anatomic structures, 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 through automatically adjusts recon field of view selection.  
FAST 3D Align requires Workstream 4D.

DoseMAP is exists of the three parts.

These three parts in combination with each other deliver a complete and comprehensive dose management.

**Report Dose:** Create transparency and document dose values.

- DICOM SR Dose Reports: DICOM structured file allows for the extraction of dose values (CDTIvol, DLP)

- DoseLogs: Whenever a limit exceeds of the set up reference dose levels (Dose Notification and Dose Alert) automatically a report is created on the system.  
The report can for example be used for audit purposes.

**Analyze Dose:** Assess the dose situation.

- CARE Analytics: makes it possible to set a query and retrieve DICOM SR Dose Reports. With CARE Analytics it is possible assess DICOM SR Dose Reports from different DICOM nodes and document dose data to get an insight in radiation dose per case or examination type, cumulative dose per patient or to start in-house dose reporting.

Exported and structured dose information makes it possible to monitor the dose over time and gives an insight in the radiation values per examination type. Based on that outcome, measures can eventually be defined to reduce dose.

- CARE Dashboard: Pre-examination dose check-up by showing an overview of all the used dose reduction features per scan.

- CARE Profile: Pre-examination dose check-up by displaying the dose distribution prior to the scan at every z-position.

**Protect Dose:** Manage access to protocols and potentially protect patients from over-radiation

- Access protection: by setting a password it is only possible to change and access the scan protocols in the Scan Protocol Assistant by authorized staff members only.

- Dose Notification and Dose Alert: Both functionalities may help to protect from over-radiation and warn the operator in case set dose thresholds are exceeded.  
Dose Notification checks the dose values per chronicle entry.  
Dose Alerts checks the accumulated dose per z-position.

Dose reduction with CT has been limited by the currently used filtered back projection (FBP) reconstruction algorithm. When using this conventional reconstruction of acquired raw data into image data, a trade-off between spatial resolution and image noise has to be considered. Higher spatial resolution increases the ability to see the smallest detail; however, it is directly correlated with increased image noise in standard filtered back projection reconstructions as they are used in CT scanners today.

Iterative reconstruction approaches allow decoupling of spatial resolution and image noise.

With the next generation of iterative reconstruction, ADMIRE (Advanced Modeled Iterative REconstruction) correction loops are introduced into the image generation process next to a more precise modeling of geometry and hardware components.

Superb details, delineation and sharpness of organ borders and positive impact on image quality.  
These iteration loops utilize raw-data information to significantly improve image quality.

## Description

A statistical weighting of all projections and measuring points in the raw data domain improve the quality and reduce streak artifacts, e.g. in the shoulder region. Additionally, intelligent model based noise cancellation iteration will take place in the image domain. This iteration distinguishes anatomical structures from noise and results in a neutral image impression and excellent IQ. Additionally, advanced modeling of the Stellar detector, Straton tube and scanner geometry in the complete reconstruction loop will substantially improve image quality eliminating artifacts even further.

### Thick slice reconstruction allows for PACS-ready workflow.

This new iterative reconstruction technique results in a significantly superior image quality with reduced noise and increased image sharpness that can be translated to dose savings for a wide range of clinical applications. ADMIRE shows a benefit in image quality in image thicker than 3mm and therefore the impact of ADMIRE is visible on the PACS-station.

### Reader-ready reconstructions deliver the desired image impression on the fly

The new IRS will support the reconstruction performance so that ADMIRE is suitable for the daily routine and it creates Reader-Ready Reconstructions with a reconstruction speed of up to 20 images/second. Different ADMIRE kernels and five reconstruction strengths can be chosen to tailor the results of ADMIRE to the personal requirements.

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.

In today's clinical environment, there are cases for which it is important to visualize areas outside of the normal 50 cm CT scan field. For this reason, special reconstruction algorithms have been created to allow for visualization of objects using a FoV up to 78 cm. This extra versatility was primarily created to assist with radiation treatment planning applications. The image quality for the area outside the standard 50 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 normal 50 cm scan field, depending on the anatomy scanned.

The X-ray tube's kilo voltage (kV) determines the average energy level of the X-ray beam. Changing the kV setting results in an alteration of photon energy and a corresponding attenuation modification of the materials scanned. In other words, X-ray absorption is energy dependent, e.g. scanning an object with 80 kV results in a different attenuation than with 140 kV. In addition, this attenuation depends also on the type of tissue scanned. Iodine, for instance, has its maximum attenuation at low energy, while its CT-value is only about half in high-energy scans. The attenuation of bones, on the other hand, changes much less when exposed to low-energy scans compared to high-energy examinations. *syngo* Dual Energy Scan exploits this effect: Two X-ray sources running simultaneously at different energies (80/140 kV or 100/140 kV) acquire two spiral data sets showing different attenuation levels.

<p><b>Description</b></p>
<p>The Asynchronous Recon in FAST DE allows for multiple image reconstructions and reformats, parallel to Dual Energy scanning. With this feature reconstruction job requests can be directly 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.</p>
<p>FAST DE Results enables a straight forward Dual Energy workflow. You can select dedicated Dual Energy applications at the AWP and they will be sent directly to the PACS without any interaction needed. Available applications for FAST DE Results are:</p> <ul style="list-style-type: none"> <li>- DE Monoenergetic (40 keV, 50 keV, 70 keV, 100 keV, 120 keV, 140 keV, 190 keV)</li> <li>- DE Mixed images</li> <li>- DE Iodine overlay image</li> <li>- DE VNC image</li> <li>- DE Iodine + VNC</li> <li>- DE Optimum Contrast</li> </ul> <p>FAST DE Results is as easy as selecting a recon job and will enhance your daily workflow significantly.</p>
<p>The Multi Purpose table allows to quickly exchanging table tops depending on the dedicated use. The standard table top with a curved surface and a width of 45mm for a comfortable positioning of the patient allows for all radiology applications.</p> <p>The optional flat carbon fibre table top is 530mm wide and fully compliant with TG-66 guidelines with a deflection of &lt;5mm. It features a position recognition system and HU equivalents and a Indexing system.</p> <p>In addition the optional Trauma table top allows for the connection to the clinical patient transportation shuttle and eliminates the need for unnecessary patient re-positioning. This trauma table top offers a high capacity patient weight limit to support up to 307 kg/676 lbs of patient weight. Its flat surface allows for easy positioning and transfer from and to the table. Special accessories and table width of 530 mm for obese patients ensure a safe and comfortable positioning. It includes a wide range of positioning aids, including a tiltable head holder.</p>
<p>Questions that may arise at the <i>syngo</i> CT Workplace can be addressed quickly and efficiently via network PC without having to go to the <i>syngo</i> CT Workplace.</p>
<p>19" Monitors, 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</p> <p>The dual monitor ceiling support consists of: a Ceiling support with installation kit and voltage supply.</p> <p>Available for room heights (unfinished concrete floor) from 2600mm to 3700mm.</p> <p>Note: If the room height is not included in the recommended range, an ergonomic monitor viewing height might not be possible, in this case the use of a monitor cart is recommended. Please refer to the Planning Guide regarding further details.</p>
<p>Mobile trolley for accommodation and safe installation of the i-control CT module</p>
<p><i>syngo</i> Volume Perfusion CT Body offers:</p> <ul style="list-style-type: none"> <li>- Fast simultaneous 3 dimensional calculation of: <ul style="list-style-type: none"> <li>- Blood Flow image</li> <li>- Blood Volume image</li> <li>- Permeability image for organs and tumors</li> </ul> </li> </ul>

Description
<ul style="list-style-type: none"> <li>- various optional parameter images.</li> <li>- Automated motion correction for improved accurate anatomical object alignment.</li> <li>- Predefined evaluation settings for different organs.</li> <li>- Specific evaluation protocols for liver perfusion.</li> <li>- Organ specific guided workflow.</li> <li>- Optimized 3 dimensional color display of perfusion parameter images including image type dependent multislice windowing</li> <li>- Composite images allowing a merged display of an anatomical image with a color parameter display in the target ROI</li> <li>- ROI measurement with calculation tools of mean value and standard deviation for detailed analysis of perfusion changes</li> </ul> <p><b>Documentation</b></p> <ul style="list-style-type: none"> <li>- Storage of all result images in the database</li> <li>- Direct copy to filming</li> </ul>
<p>While CT Angiography of the coronary arteries provides information about vessel stenosis, Heart Perfusion scanning allows to add valuable information on the hemodynamic relevance of those findings by enabling myocardial perfusion imaging for the entire ventricle.</p>
<p>Coronary Artery Disease (CAD) causes inadequate blood supply to the heart by blocked or stenotic arteries. A dynamically acquired myocardial scan may help in characterizing the ensuing hemodynamic changes in the myocardium.</p> <p><b>syngo Volume Perfusion CT (VPCT) Body – Application Class Myocardium</b></p> <p>The new Myocardium class of the <i>syngo</i> Volume Perfusion CT Body package allows the display and analysis of dynamic CT data of the heart, acquired after contrast injection with the heart perfusion scanning mode of the SOMATOM Definition Flash. The application might help to evaluate ischemic myocardium and assess hemodynamic changes in ischemic cardiac segments.</p> <p>The application class contains a guided workflow that optimizes information extraction from the dedicated Flash scan mode. It allows a flexible display of time attenuation curves and allows analyzing the data with several mathematical models.</p> <p>Requires <i>syngo</i> VPCT Body.</p>
<p>FAST Wizard Cardio is intuitive guidance software, fully integrated in the cardio workflow. It allows training the cardiac workflow and provides guidance and support during the examination. It is based on the latest cardio application training material and provides helpful tips to avoid common problems and pit-falls. It features step-by-step training on-screen for various cardiac examinations. Text and images are delivered in a default setting based on Siemens' latest application training, but are fully customizable by the user.</p> <p>HeartView CT is highly recommended.</p>
<p>The option supports ultra-fast FlashSpiral scanning for maximum dose saving and scan times down to a quarter heart beat. ECG-synchronized Flash Cardio Sequence for dose efficient but versatile low dose cardiac imaging, including high heart rates and functional evaluation. CT images of the heart are acquired in defined phases of the cardiac cycle by prospective ECG-triggered sequence scanning and retrospective ECG-gated spiral scanning. The ECG signal used for gating the CT images is acquired by an integrated ECG device. The ECG signal is displayed on the gantry front cover and the scan interface. Dual Source acquisition mode with single segment reconstruction enables heart-rate independent temporal resolution of 75 ms (factor 2 higher than single source acquisition with same parameter). Down to 32.5</p>



## Description

ms temporal resolution combining HeartView Flash acquisition with robust 2-segment reconstruction. With prospective ECG-triggered scanning, quick scans are triggered by ECG signals. The revolutionary FlashSpiral Cardio mode collects data projections of the entire heart in ultrafast 250 ms within a single diastolic phase. This performance is a direct result of having 2 X-ray tubes, simultaneously collecting information, combined with unprecedented table feeds above 400 mm/s. All the while a true temporal resolution of 75 ms is applied for each individual image.

The Flash Cardio Sequence mode introduces the Siemens-only dual-step pulsing, that maintains a low dose level during the systolic phase to calculate ejection fraction in addition to coronary imaging, therefore combining low dose coronary imaging with functional information,

Retrospective gating is based on a continuous spiral scan with simultaneous ECG recording. The cardio spiral reconstruction allows volume imaging in selectable phases of the cardiac cycle. With retrospective ECG-gated spiral scans the ECG signal can be edited for improved image quality in the case of severe arrhythmia. A dedicated "Preview" tool enables the planning of the volume reconstruction during an optimal cardiac phase on the basis of axial single slices.

Adaptive ECG-synchronized dose modulation (pulsing) allowing for optimal dose savings of up to 50% compared to single source CT scanners, with advanced irregular and ectopic heartbeat detection algorithm. The 4% MinDose algorithm lets the user save even more dose on the patient examination for dedicated coronary analysis. A special algorithm allows to decrease dose during ECG-Pulsing to 4% of the full tube output, thus decreasing dose about an additional 25%. Data evaluation is only possible in the full dose frame.

*syngo* Calcium Scoring supports easy volumetric processing of the data and treats individual calcified lesions as 3D objects. For effective visualization *syngo* Calcium Scoring allows axial images to be displayed together with fast, interactive MIPs. On each image the user can mark calcified regions in up to four coronary arteries. The tabular display showing the score of the four arteries is updated automatically.

The software supports all the usual quantification algorithms: Agatston scoring, volumetric scoring and calcium mass quantification. The effect of overlapping slices is compensated. The volume and mass can be determined on the basis of basic volumetric scoring or volumetric scoring with continuous interpolation. The calcium mass is determined in equivalent CaHA units and is calibrated automatically for SOMATOM systems via the scan mode. The threshold for identifying coronary calcifications is configurable.

- User input of calibration factors (allows evaluation of calcium mass for non - Siemens images, if the factors are known)
- Automated selection of coronary calcifications by "3D picking" functionality, which allows automatic volumetric region growing of connected lesions in successive slices.
- Interactive selection/deselection of regions which contribute to calcium scoring.
- User-defined assignment of lesions to one of the four arteries (LM, LAD, CX, RCA) or to other lesions or structures.
- 3D editing of lesions.
- Image annotation
- Built in Framingham Risk calculator
- Built in Procam Risk calculator
- Patient size adjusted calculation of calcium mass, based on the recommendations of the "International Consortium for Multi-Detector CT Evaluation of Coronary Calcium"

Report Generation via List & Label including free text and clinical images

- Saving on floppy disk/hard disk and/or printing
- Interface to user-defined reference table can be used for risk
- Stratification. The corresponding risk percentile information can be
- included in the report
- Easy and fast Report Configuration for customized hospital/office
- information on the final report
- Printing of results on laser film and paper printer.
- Export of results to RTF, PDF, JPEG, etc.
- Export of results as DICOM SR

Prerequisites:

## Description

Correct operation of the software option is guaranteed only for image data collected using SOMATOM scanners with HeartView option.

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 allows to perform perfusion studies over the entire organ in both head and body. Enabling to assess the entire extent of the 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 phase 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.

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

### Lung Imaging

This SOMATOM Definition scanner offers two specific scan protocols to provide Lung Imaging at 1.3 mGy CTDI or greater and for use with post-processing applications

**LungLowDose** Uses CARE Dose 4D in conjunction with CARE kV and adaptive dose shield to provide imaging of the lung with a default scanner protocol set at 1.3 mGy CTDI. This protocol provides images from .6 mm and are acquired using .6 mm collimation and a z-sharp mm of 128X0.6 mm off. Default settings of a reference kVp of 120 and quality Reference mAs of 20 with rotation speed of .50 are used to achieve this dose. This protocol is set using a Kernel of B70f, B31F and B70F for axial viewing.

**LungCARE** Uses CARE Dose 4D in conjunction with CARE kV and adaptive dose shield to provide imaging of the lung with a default scanner protocol set at 1.3 mGy CTDI. This protocol provides images from .6 mm and are acquired using .6 mm collimation and a z-sharp mm of 128X0.6 mm off. Default settings of a reference kVp of 120 and quality Reference mAs of 20 with rotation speed of .50 are used to achieve this dose. This protocol is set using a Kernel of B80f, B31F and B60f to be automatically transferred and post-processed on a Siemens workstation.

- Reliable assessment of the type and extent of cerebral perfusion disturbances.
- Simple and easy workflow with automatic reference vessel and automatic midline identification.
- New: Auto-Stroke Functionality for automated display of all perfusion parameters within seconds
- 3D analysis of all perfusion data
- New automated guided workflow with automatic quantification of Cerebral Blood Flow (CBF), Cerebral Blood Volume (CBV), Time To Peak (TTP) and Mean Transit Time (MTT) parameters.
- Integrated automated 3 dimensional assessment of infarcted tissue and tissue at risk.
- Overview of all perfusion parameters in one window set (CBF, CBV, MTT, TTP)
- Integrated automated motion correction enhance the ability of data evaluation in uncooperative patients

### Brain Tumor Evaluation

Fully automated *syngo* Volume Perfusion CT facilitates quantitative 3D evaluation of brain tumors.

<b>Description</b>
<ul style="list-style-type: none"><li>- Visualization and evaluation of vascular leakage in 3 D</li><li>- Dedicated 3D blood-brain-barrier imaging</li><li>- Enhance the ability to grade tumors</li><li>- Plan biopsies and monitor therapy</li></ul>
<p><u>Maintenance Bypass Panel (MBP).</u> 3-Circuit Breaker (BIB, MBP, MIS), 500A, 480V, 65 kAIC, Wall Mounted panel with Kirk Key interlocks, "OK to Bypass" light, and auxiliary contacts.</p> <p>MBP Cabinet Dimensions: 36.0"W x 11.3"D x 73.0"H MBP Cabinet Weight: 500 lbs.</p> <p>-</p>