North Carolina Department of Health and Human Services
Division of Health Service Regulation

Pat McCrory
Governor

Aldona Z. Wos, M.D.
Ambassador (Ret.)
Secretary DHHS

Drexdal Pratt
Division Director

July 11, 2014

J. Anthony Rose
810 Fairgrove Church Road SE
Hickory, NC 28602

No Review

Facility:	Catawba Valley Medical Center
Project Description:	Replace existing CT scanner
County:	Catawba
FID #:	933080

Dear Mr. Rose:

The Certificate of Need Section (CON Section) received your letter of June 3, 2014, regarding the above referenced proposal. Based on the CON law **in effect on the date of this response to your request,** the proposal described in your correspondence is not governed by, and therefore, does not currently require a certificate of need. However, please note that if the CON law is subsequently amended such that the above referenced proposal would require a certificate of need, this determination does not authorize you to proceed to develop the above referenced proposal when the new law becomes effective.

Moreover, you need to contact the Construction, Radiation Protection, and Acute and Home Care Licensure and Certification Sections of the Division of Health Service Regulation to determine if they have any requirements for development of the proposed project.

It should be noted that this determination is binding only for the facts represented by you. Consequently, if changes are made in the project or in the facts provided in your correspondence referenced above, a new determination as to whether a certificate of need is required would need to be made by the Certificate of Need Section. Changes in a project include, but are not limited to: (1) increases in the capital cost; (2) acquisition of medical equipment not included in the original cost estimate; (3) modifications in the design of the project; (4) change in location; and (5) any increase in the number of square feet to be constructed.

Please contact the CON Section if you have any questions. Also, in all future correspondence you should reference the Facility I.D. # (FID) if the facility is licensed.

Sincerely,

Julie Halatek

Julie Halatek
Project Analyst

Martha J. Frisone

Martha J. Frisone, Interim Chief
Certificate of Need Section

cc: Medical Facilities Planning Branch, DHSR
Construction Section, DHSR
Acute and Home Care Licensure and Certification Section, DHSR
Radiation Protection Section, DHSR

CATAWBA VALLEY MEDICAL CENTER

June 3, 2014

Ms. Martha Frisone, Interim Chief
Certificate of Need Section
Division of Health Service Regulation
2704 Mail Service Center
Raleigh, NC 27699-2704

RE: Catawba Valley Medical Center, Exemption Request to Replace Medical Equipment
FID#933080

Dear Ms. Frisone:

Catawba Valley Medical Center (CVMC) is seeking to replace one of its three existing computed tomography (CT) scanners due to the advancing age of the equipment. The equipment to be replaced, a Siemens Somatom Sensation 16 CT scanner (Serial # 50630), was determined to be exempt from CON review in correspondence dated December 10, 2002.

The Siemens Somatom Sensation 16 CT (serial # 50630) was originally installed at Catawba Valley Medical Center when purchased in May 2004. In February 2005 CVMC expanded its imaging department to include leased space in an off-site location. At that time the Somatom Sensation 16 CT was relocated to the new off-site location, referred to as Catawba Valley Imaging Center. Since that time the Somatom Sensation 16 CT has operated continuously, Monday through Friday.

Advancements in CT technology have dramatically reduced the radiation to which patients are exposed who must receive complex imaging scans. The new CT will reduce the radiation dose by as much as 60 percent on most scans. The Sensation 16 can produce 32 images per second of acquisition with the new system acquiring up to 100 images a second. This will not only reduce the time required per scan, thereby increasing patient throughput, it will dramatically reduce the radiation to which CVMC's patients are exposed. Therefore, to improve both patient safety and operational efficiency, CVMC is requesting that the Certification of Need Section provide CVMC an exemption from CON review to replace the existing Siemens Sensation 16 unit with comparable medical equipment as defined in N.C.G.S. 131E-176(22a).

The replacement equipment proposed is a Siemens Somatom Definition AS 40 system. Both the Sensation 16 and its proposed replacement are multifunctional scanners capable of performing multiple examinations, ranging from routine scans to high-end vascular (CTA) procedures. The new Definition AS 40, however, maximizes the clinical outcome by allowing scanning and post-processing to be performed simultaneously. This means that the user is capable of performing multiple tasks on less hardware, thereby improving operator productivity and patient throughput. A table comparing the capabilities of the current and proposed equipment is provided in Exhibit 1.

The total purchase price of the new equipment is $599,967.00. See Capital Cost Form in Exhibit 2. This price includes delivery and installation by the Original Equipment Manufacturer (OEM), Siemens, along with a trade-in of the current Sensation 16 which will be removed from North Carolina. (See quotation included in Exhibit 2.) Renovations will not be required to accommodate the new scanner, although a $5,000.00 contingency has been included to address any unforeseen circumstances. This brings the total estimated project cost to $604.967.

A brochure describing the features of the Definition AS 40 is provided in Exhibit 3. Exhibit 4 contains documentation that the Siemens Sensation 16 is currently in operation with patient-specific information redacted. Catawba Valley Medical Center anticipates no increase in its charges for CT exams due to the acquisition of the replacement equipment.

Thank you in advance for exempting CVMC's request to replace the Siemens Sensation 16 CT scanner with a Siemens Somatom Definition AS 40 from Certificate of Need review. I assure that, to the best of my knowledge, the capital costs provided are complete and correct and that it is my intent to carry out the proposed project as described. If you have questions regarding the request or require additional information, please direct them to Lisa Hamby at 828-326-3478.

Sincerely,

J. Anthony Rose, FACHE
President and CEO

JAR:mme

Attachments

EXHIBIT 1

Equipment Comparison Form:
Siemens SOMATOM Sensation 16 CT Scanner and
Siemens SOMATOM Definition AS40

EXHIIT 1

CVMC EQUIPMENT COMPARISON: CVIC CT REPLACEMENT EQUIPMENT

	EXISTING EQUIPMENT	REPLACEMENT EQUIPMENT
Type of Equipment (List Each Component)	CT	CT
Manufacturer of Equipment	Siemens	Siemens
Tesla Rating for MRIs	NA	NA
Model Number	Sensation 16	Definition AS 40
Serial Number	50630	Not Available
Provider's Method of Identifying Equipment	CVIC CT (Site ID 400-147732)	CVIC CT (Site ID assigned by manuf.)
Specify if Mobile or Fixed	Fixed	Fixed
Mobile Trailer Serial Number/VIN #	Not Applicable	Not Applicable
Date of Acquisition of Each Component	May 2004	October 2014
Does Provider Hold Title to Equipment or Have a Capital Lease?	Owns	Will Own
Specify if Equipment Was/Is New or Used When Acquired	New	New
Total Capital Cost of Project (including Construction, etc.) <Use Attached Form>	$1,285,797	$604,967
Fair Market Value of Equipment	$1,269,197	$599,967
Net Purchase Price of Equipment	$1,269,197	$599,967
Locations Where Operated	CV Imaging Center (CVIC)	CV Imaging Center (CVIC)
Number Days in Use/To be Used in N.C. Per Year	260 (M-F)	260 (M-F)
Percent of Change in Patient Charges (by Procedure)	NA	0
Percent of Change in Per Procedure Operating Expenses (by Procedure)	NA	0
Type of Procedures Currently Performed on Existing Equipment	All routine CT exams, CTA	
Type of Procedures New Equipment is Capable of Performing		All routine CT exams, CTA, Dual Energy single source scan technique. Dose Reduction Technique

EXHIBIT 2

Capital Costs of Replacement Equipment
Quotation of Siemens SOMATOM Definition AS40

EXHIBIT 2
PROPOSED TOTAL CAPITAL COST OF PROJECT

Project: Replace Siemens Sensation 16 CT Scanner with Definition AS 4
Provider/Company: Catawba Valley Medical Center at CVIC

A.	**Site Costs**		
	(1) Full purchase price of land.....	$	NA
	(2) Closing costs.....	$	NA
	(3) Site Inspection and Survey.....	$	NA
	(4) Legal fees and subsoil investigation.....	$	NA
	(5) Site Preparation Costs.....	$	NA
	(6) Other (Specify).....	$	NA
	(7) **Sub-Total Site Costs.....**	$	NA
B.	**Construction Contract**		
	(8) Cost of Materials.....	$	
	(9) Cost of Labor.....	$	
	(10) Other (Permits).....	$	
	(11) **Sub-Total Construction Contract.....**	$	
C.	**Miscellaneous Project Costs**		
	(12) Building Purchase.....	$	
	(13) Fixed Equipment Purchase/Lease.....	$	599,967
	(14) Movable Equipment Purchase/Lease.....	$	
	(15) Furniture.....	$	
	(16) Landscaping.....	$	
	(17) Architect and Engineering Fees.....	$	
	(18) Financing Costs (e.g. Bond, Loan, etc.).....	$	
	(19) Interest During Construction.....	$	
	(20) Other (Contingency).....	$	5,000
	(21) **Sub-Total Miscellaneous.....**	$	
	(22) **Total Capital Cost of Project (Sum A-C above)**	$	604,967

SIEMENS

Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Mathew Hayes - (336) 263-4273

Customer Number: 0000005129

Date: 12/28/2013

CATAWBA VALLEY MEDICAL CTR
810 FAIRGROVE CHURCH RD
HICKORY, NC 28602-9617

Siemens Medical Solutions USA, Inc. is pleased to submit the following quotation for the products and services described herein at the stated prices and terms, subject to your acceptance of the terms and conditions on the face and back hereof, and on any attachment hereto.

Table of Contents **Page**

Proposal valid until 2/11/2014

This proposal includes the trade-in of Sensation 16 referenced in Trade Sheet Project # 2013-2264.

Offer includes 6 month extended warranty.

Deinstall rigging costs are included for removal of existing Sensation 16 scanner and installation of new Definition AS 40 scanner.

This offer is only valid if Quote #1-5FK10F and Quote #1-2APDWQ are simultaneously placed with Siemens and a signed POS contract must accompany the equipment order.

This order shall be contingent upon CON approval.

Accepted and Agreed to by:

Siemens Medical Solutions USA, Inc.

By (sign): _____
Name: Mathew Hayes
Title: Account Executive
Date: 12/30/2013

CATAWBA VALLEY MEDICAL CTR

By (sign): Robin Farley
Name: Robin Farley
Title: Director, materials mgmt.
Date: 12/30/2013

All pages of the signed proposal must be returned to Siemens to process the order - Thank you.

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Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Mathew Hayes - (336) 263-4273

Quote Nr:	**1-5FK10F Rev. 1**
Terms of Payment:	00% Down, 80% Delivery, 20% Installation Free On Board: Destination
Purchasing Agreement:	PREMIER PURCHASING PARTNERS LP PREMIER PURCHASING PARTNERS LP terms and conditions apply to Quote Nr 1-5FK10F

SOMATOM Definition AS 40-slice Configuration

All items listed below are included for this system:

Qty	Part No.	Item Description
1	14420859	**SOMATOM Definition AS (40 Slice)** The SOMATOM Definition AS (AS, 40-slice configuration) is Siemens' state-of-the-art single source CT that offers the possibility to maximize clinical outcome and to minimize radiation dose. The ultimate goal is to provide medical professionals more time to take better care of their patients. With this, it is set to raise the standard of patient-centric productivity. Using Siemens' z-Sharp technology the SOMATOM Definition AS can provide fast sub-millimeter volume coverage and very high spatial resolution. The high rotation time of 0.33 seconds delivers excellent temporal resolution. With Siemens' new FAST - Fully Assisting Scanner Technologies - the SOMATOM Definition AS can simplify typically time consuming and complex procedures: the scanning process gets more intuitive and the results become more reproducible. Its comprehensive low dose portfolio includes many unique features like CARE kV that sets the ideal voltage for every examination or industry's first Adaptive Dose Shield that prevents clinically irrelevant over radiation in spiral scanning. Additionally, its large bore of 78 cm opens CT to all patients, meaning that virtually no patient is excluded.
1	14420773	**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 overall 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.
1	14420771	**CARE Child** Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols
1	14433993	**FAST Planning #AWP** Direct, organ-based setting of scan and recon ranges for a faster and more standardized workflow
1	14433820	**DoseMAP** DoseMAP - Siemens CT Dose Manage Program - creates transparency in dose values and makes it possible to assess the dose situation 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. DoseMAP may also help to protect our patients from over radiation - thanks to its alert function that warms the operator in case set dose thresholds are exceeded. Additionally, to protect the set dose levels, access to scan protocols can be restricted to prevent unauthorized changes to the scan parameters

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Qty	Part No.	Item Description
1	14420766	**SAFIRE #AWP** The Sinogram Affirmed Iterative Reconstruction (SAFIRE) enhances spatial resolution, reduces image noise and increases sharpness by introducing multiple iteration steps in the reconstruction process. The resulting superior image quality enables to reduce dose by up to 60%*. *In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, 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, homogenity, low-contast 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.
1	14433146	**FAST Iterative Reconstruction** FAST Iterative Reconstruction allows a fast reconstruction performance in clinical routine with Sinogram Affirmed Iterative Reconstruction (SAFIRE).
1	14428058	**Gantry tilt incl. tilted spiral** Allows for sequential scanning with a tilted gantry between +/- 30°, depending on the vertical position of the table. Using the gantry tilt sensitive organs (like eye lenses) can be moved out of the scan range or it eases access during interventional procedures. The tilted spiral allows to utilize the gantry tilt for spiral scan modes.
1	14408111	**Extended Field of View #AWP** 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	14420811	**syngo DE Scan for Single Source#AWP** The syngo Dual Energy Scan for Single Source option offers the possibility to acquire two spiral data sets in sequence at different energies. The results are two data sets with diverse information.
1	14408152	**UHR** UHR mode delivers Ultra High resolution in plane of up to 24lp/cm for high defined imaging of small structures such as inner ear, joints or fractures of the bone
1	14420777	**Patient Table 2000 mm** Patient table to support up to 200cm scan range. 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. Table height can be controlled alternatively by means of foot switch (2 each on both sides of the patient table). In the case of emergency stop or power failure, the tabletop can also be moved manually in horizontal direction. Max. table load: 227 kg/500 lbs, Table feed speed: 2-200 mm/s, Distance between gantry front and table base 40 cm. Positioning aids: Positioning mattress, mattress protector, head-arm support (inclusive cushion), and non-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.
1	14408328	**ELEVATE O Definition AS** Elevate from an old Siemens CT scanner to a new SOMATOM Definition AS.
1	14408022	**Cooling System Air** SOMATOM Definition AS air cooling for the dissipation of heat generated in the gantry.
1	14408032	**Rear cover incl. gantry panels** Rear Cover including gantry control panels with control functionality from the backside.
1	14408094	**Keyboard English** Keyboard in the above-mentioned language.
1	14408031	**Cable loom 25 m** Cable loom used to connect the power distribution system (PDS) with the gantry.
1	14408101	**Computer Desk #AWP** New CT desk to accommodate the control components and color monitor. Width: 1200 mm, Depth: 800 mm, Height: 720 mm.

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Fax: (866) 309-6967

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Qty	Part No.	Item Description
1	14408102	**Computer Cabinet #AWP** 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	CT_PM	**CT Project Management** A Siemens Project Manager (PM) will be the single point of contact for the implementation of your Siemen's equipment. The assigned PM will work with the customer's facilities management, architect or building contractor to assist you in ensuring that your site is ready for installation. Your PM will provide initial and final drawings and will coordinate the scheduling of the equipment, installation, and rigging, as well as the initiation of on-site clinical education.
1	CT_STD_RIG_INST	**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.
1	CT_PR_AS40_EO_BON	**AS40 Elevate O Bonus**
1	CT_STD_DEINSTALL	**CT Standard De-Installation**
1	CT_INITIAL_32	**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.
2	CT_DEFSYNGO_BCLS	**Definition Systems Basic syngo Class** Tuition for (1) imaging professional to attend Siemens Classroom Course at Siemens Training Center. The objectives of this basic syngo class are to introduce the user to the Siemens SOMATOM CT Definition user interface of the syngo platform, scanning parameters and their effect on image quality, and instructions on building protocols, demonstration of software functions, and hands-on sessions. This class includes lunch, economy airfare, and lodging for (1) imaging professional. All arrangements must be arranged through Siemens designated travel agency. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	CT_FOLLOWUP_12	**Follow-up training 12 hrs** Up to (12) hours of follow-up on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.
1	PSPD250480Y3K	**Surge Protective Device (SPD)**
1	4SPAS014	**Low Contrast CT Phantom & Holder**
1	FAST_ADJUST	**FAST Adjust** FAST Adjust: assists the user to handle system settings in a fast and easy way by automatically solving of conflicts within user defined limits by one single click on the FAST Adjust button. The limits for scan time and tube current per scan are defined via the Scan Protocol Assistant. FAST Adjust offers an undo functionality to return to previously set values.
1	FAST_SCAN_ASSIST	**FAST Scan Assistant** FAST Scan Assistant: An intuitive user interface for solving conflicts by changing the scan time, resp. the pitch and/or the maximum tube current manually.
1	CARE_KV	**CARE kV** CARE kV: First automated, organ-sensitive voltage setting to improve image quality and contrast-to-noise-ratio while optimizing dose and potentially reducing it by up to 60%.

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Qty	Part No.	Item Description
1	CARE_PROFILE	**CARE Profile** CARE Profile: Visualization of the dose distribution along the topogram prior to the scan
1	CARE_DASHBOARD	**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
1	DOSE_NOTIFICATION	**Dose Notification** 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.
1	DOSE_ALERT	**Dose Alert** 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.
1	ADAPT_DOSE_SHIELD	**Adaptive Dose Shield** Adaptive Dose Shield for spiral acquisition to eliminate pre- and post-spiral over-radiation.
1	CARE_DOSE4D	**CARE Dose4D** CARE Dose4D delivers the highest possible image quality at the lowest possible dose for patients - maximum detail, minimum dose. Adaptive dose modulation for up to 60% dose reduction
1	CT_EXTEND_WARRANTY	**CT Extended Warranty @ 6 month $49,255**
1	CT_ADDL_RIGGING	**Additional Rigging CT $2,000**
1	CTSDEF01	**CT SLICKER; SOMATOM Definition**

System Total: $599,967

FINANCING: The equipment listed above may be financed through Siemens. Ask us about our full range of financial products that can be tailored to meet your business and cash flow requirements. For further information, please contact your local Sales Representative.

ACCESSORIES: Don't forget to ask us about our line of OEM imaging accessories to complete your purchase. All accessories can be purchased or financed as part of this order. To purchase accessories directly or to receive our accessories catalog, please call us directly at 1-888-222-9944 or contact your local Sales Representative.

COMPLIANCE: Compliance with legal and internal regulations is an integral part of all business processes at Siemens. Possible infringements can be reported to our Helpdesk "Tell us" function at www.siemens.com/tell-us.

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Siemens Medical Solutions USA, Inc. General Terms and Conditions

1. GENERAL

1.1 Contract Terms. These terms and conditions constitute an integral part of any contract between Seller and Purchaser identified on the first page hereof and shall govern the sale of the products identified in such contract ("Products"). Seller shall not be bound by, and specifically objects to, any terms, conditions or other provisions which are different from or in addition to the provisions of this Agreement (even if provided to Seller concurrently with this Agreement), unless Seller specifically agrees to any such provision in a writing signed by Seller. Neither Seller's lack of objection to any such terms, nor delivery of the Products or provision of any services hereunder, shall constitute the agreement of Seller to any such terms. Purchaser acknowledges that this is a commercial and not a consumer transaction.

1.2 Acceptance. Purchaser shall be deemed to have assented to, and to have waived any objection to, this Agreement upon the earliest to occur of any of the following: Purchaser's completion or execution of this Agreement; Purchaser's acceptance of all or any part of the Products; Purchaser's issuance of a purchase order for any Products identified on Seller's quotation or proposal; or delivery of the Products to the common carrier for shipment pursuant hereto.

1.3 Refurbished/Used Products. For Products identified on this Agreement as used or refurbished Products, these Products have been previously owned and used. When delivered to Purchaser, the Products may have received mechanical, electrical and/or cosmetic reconditioning, as needed, and will comply with the manufacturer's specifications. Since pre-owned Products may be offered simultaneously to several customers, the sale of such Products to Purchaser cannot be guaranteed and is subject to continuing availability at the time Purchaser accepts Seller's offer to sell the Products. If the Products are no longer available, Seller will use its best efforts to identify other products in its inventory that may be suitable for purchase by Purchaser, and if substitute products are not acceptable to Purchaser, then Seller will cancel the order and refund to Purchaser any deposits previously paid. The warranty period for any used or refurbished Products will be separately stated on the quotation.

1.4 Third Party Products. If this Agreement includes the sale of third party products not manufactured by Seller, then Purchaser agrees and acknowledges that (a) Purchaser has made the selection of these products on its own, (b) the products are being acquired by Seller solely at the request of and for the benefit of Purchaser, in order to eliminate the need for Purchaser to issue a separate purchase order to the manufacturer of the products, (c) no representation, warranty or guarantee has been made by Seller with respect to the products, (d) the obligation of Purchaser to pay Seller for the products is absolute and unconditional, (e) Purchaser will indemnify and hold Seller harmless from and against any and all claims, regardless of the form of action, related to, resulting from or caused by the products or any work or service provided by the manufacturer of the products or any other party, (f) use of the products may be subject to Purchaser's agreement to comply with any software licensing terms imposed by the manufacturer, as well as any applicable laws, rule and regulations; and (g) the manufacturer, and not Seller, is solely responsible for any required installation, testing, validation, tracking, product recall, warranty service, maintenance, support, and complaint handling, as well as any other applicable FDA regulatory requirements, and the Purchaser will look solely to the manufacturer regarding these services and will assert no claim against Seller with respect to these products.

2. PRICES

2.1 Quotations. Unless otherwise agreed to in writing or set forth in the quotation, all prices quoted by Seller are based on U.S. dollars, and include standard and customary packaging. F.O.B. terms are set forth in Section 6.2 hereof. Domestic prices apply only to purchasers located in, and who will use the Products in, the U.S. International prices apply to all purchasers located outside of, or who will use or ship or facilitate shipment of the Products outside of, the U.S. Unless otherwise stated, the quotation shall only be valid for forty-five (45) days from the date of the quotation.

2.2 Delay in Acceptance of Delivery. Should the agreed delivery date be postponed by Purchaser, Seller shall have the right to deliver the Products to storage at Purchaser's risk and expense, and payments due upon delivery shall become due when Seller is ready to deliver.

2.3 Escalation. Unless otherwise agreed to in writing, except as to Products to be delivered within six (6) months of Seller's acceptance of Purchaser's order, Seller reserves the right to increase its prices to those in effect at the time of shipment.

3. TAXES

3.1 Any sales, use or manufacturer's tax which may be imposed upon the sale or use of Products, or any property tax levied after readiness to ship, or any excise tax, license or similar fee required under this transaction, shall be in addition to the quoted prices and shall be paid by Purchaser. Notwithstanding the foregoing, Seller agrees to honor any valid exemption certificate provided by Purchaser.

4. TERMS OF PAYMENT; DEFAULT

4.1 Payments; Due Date. Unless otherwise set forth in the quotation, Seller's payment terms are as follows: an initial deposit of 10% of the purchase price for each Product is due upon submission of the purchase order, an additional 80% of the purchase price is due upon delivery of each Product, and the final 10% of the purchase price is due upon completion of installation or when the Products are available for first patient use, whichever occurs first. Unless otherwise agreed, all payments other than the initial deposit are due net thirty (30) days from the date of invoice. Seller shall have no obligation to complete installation until the payment due upon delivery is received. All amounts payable pursuant to this Agreement are denominated in United States dollars, and Purchaser shall pay all such amount in lawful money of the United States. Partial shipments shall be billed as made, and payments for such shipments will be made in accordance with the foregoing payment terms.

4.2 Late Payment. A service charge of 1½% per month, not to exceed the maximum rate allowed by law, shall be made on any portion of Purchaser's outstanding balance which is not paid within thirty (30) days after invoice date, which charge shall be determined and compounded on a daily basis from the due date until the date paid. Payment of such service charge shall not excuse or cure Purchaser's breach or default for late payment.

4.3 Payment of Lesser Amount. If Purchaser pays, or Seller otherwise receives, a lesser amount than the full amount provided for under this Agreement, such payment or receipt shall not constitute or be construed other than as on account of the earliest amount due Seller. Seller may accept any check or payment in any amount without prejudice to Seller's right to recover the balance of the amount due or to pursue any other right or remedy. No endorsement or statement on any check or payment or in any letter accompanying a check or payment or elsewhere shall constitute or be construed as an accord or satisfaction.

4.4 Where Payment Due Upon Installation or Completion. Should any terms of payment provide for either full or partial payment upon completion of installation or thereafter, and completion of installation is delayed for any reason for which Seller is not responsible, then the Products shall be deemed installed upon delivery and the balance of payments shall be due no later than thirty (30) days from the delivery date regardless of the actual installation date.

4.5 Default; Termination. Each of the following shall constitute an event of default under this Agreement: (i) a failure by Purchaser to make any payment due Seller within ten (10) days of receipt of written notice of non-payment from Seller; (ii) a failure by Purchaser to perform any other obligation under this Agreement within thirty (30) days of receipt of written notice from Seller; (iii) a default by Purchaser under any other obligation to or agreement with Seller or Siemens Financial Services, Inc., or any assignee of the foregoing (e.g., a promissory note, lease, rental agreement, license agreement or purchase contract); or (iv) the commencement of any insolvency, bankruptcy or similar proceedings by or against Purchaser (including any assignment by Purchaser for the benefit of creditors). Upon the occurrence of any event of default, at Seller's election: (a) the entire amount of any indebtedness and obligation due Seller under this Agreement and interest thereon shall become immediately due and payable without notice, demand, or period of grace; (b) Seller may suspend the performance of any of Seller's obligations hereunder, including, but not limited to, obligations relating to delivery, installation and warranty services; (c) Purchaser shall put Seller in possession of the Products upon demand; (d) Seller may enter any premises where the Products are located and take possession of the Products without notice or demand and without legal proceedings; (e) at the request of Seller, Purchaser shall assemble the Products and make them available to Seller at a place designated by Seller which is reasonable and convenient to all parties; (f) Seller may sell or otherwise dispose of all or any part of the Products and apply the proceeds thereof against any indebtedness or obligation of Purchaser under this Agreement (Purchaser agrees that a period of 10 days from the time notice is sent to Purchaser shall be a reasonable period of notification of sale or other disposition of the Products by or for Seller); (g) if this Agreement or any indebtedness or obligation of Purchaser under this Agreement is referred to an attorney for collection or realization, Purchaser shall pay to Seller all costs of collection and realization (including, without limitation, a reasonable sum for attorneys' fees, expenses of title search, all court costs and other legal expenses) incurred thereby; and (h) Purchaser shall pay any deficiency remaining after collection of or realization by Seller on the Products. In addition, Seller may terminate this Agreement upon written notice to Purchaser

in the event that Purchaser is not approved for credit or upon the occurrence of any material adverse change in the financial condition or business operations of Purchaser.

4.6 Financing. Notwithstanding any arrangement that Purchaser may make for the financing of the purchase price of the Products, the parties agree that any such financing arrangement shall have no effect on the Purchaser's payment obligations under this Agreement, including but not limited to Sections 4.1 and 4.2 above.

5. EXPORT TERMS

5.1 Unless other arrangements have been made, payment on export orders shall be made by irrevocable confirmed letter of credit, payable in U.S. dollars against Seller's invoice and standard shipping documents. Such letter of credit shall be in an amount equal to the full purchase price of the Products and shall be established in a U.S. bank acceptable to Seller. Purchaser shall procure all necessary permits and licenses for shipment and compliance with any governmental regulations concerning control of final destination of Products.

5.2 Purchaser acknowledges that Seller is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal and usage of the Products provided under this Agreement, including any export license requirements. Purchaser agrees that such Products shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Seller of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. **PURCHASER AGREES TO INDEMNIFY, DEFEND AND HOLD SELLER HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.** If Purchaser purchases a Product at the domestic price and exports such Product, or transfers such Product to a third party for export, outside of the U.S., Purchaser shall pay to Seller the difference between the domestic price and the international retail price of such Product pursuant to the payment terms set forth herein. Purchaser shall deliver to Seller, upon Seller's request, written assurance regarding compliance with this section in form and content acceptable to Seller.

6. DELIVERY, RISK OF LOSS

6.1 Delivery Date. Delivery and installation dates will be established by mutual agreement of the parties. Seller shall make every reasonable effort to meet the agreed upon delivery date(s), but shall not be liable for any failure to meet such date(s). Partial shipments may be made.

6.2 Risk of Loss; Title Transfer. Unless otherwise agreed to in writing, the following shall apply:

(a) For Products that do not require installation by Seller, and for options and add-on products purchased subsequent to delivery and installation of Products purchased under this Agreement, delivery shall be complete upon transfer of possession to common carrier, F.O.B. Shipping Point, whereupon title to and all risk of loss, damage to or destruction of the Products shall pass to Purchaser.

(b) For Products that require installation by Seller, delivery shall be complete upon delivery of the Products to Purchaser's designated site, F.O.B. Destination; title to and all risk of loss, damage to or destruction of such Products shall pass to Purchaser upon completion of the installation.

(c) All freight charges and other transportation, packing and insurance costs, license fees, custom duties and other similar charges shall be the sole responsibility of Purchaser unless included in the purchase price or otherwise agreed to in writing by Seller. In the event of any loss or damage to any of the Products during shipment, Seller and Purchaser shall cooperate in making a claim against the carrier.

7. SECURITY INTEREST/FILING

7.1 Purchaser grants to Seller a security interest in the Products (and all accessories and replacements thereto and all proceeds thereof) until payment in full by Purchaser and satisfaction of all other obligations of Purchaser hereunder. Purchaser hereby (i) authorizes Seller to file (and Purchaser shall promptly execute, if requested by Seller) and (ii) irrevocably appoints Seller its agent and attorney-in-fact to execute in the name of Purchaser and file, with such authorities and at such locations as Seller may deem appropriate, any Uniform Commercial Code financing statements with respect to the Products and/or this Agreement. Purchaser further represents and covenants that (a) it will keep the Products in good order and repair until the purchase price has been paid in full, (b) it will promptly pay all taxes and assessments upon the Products or the use thereof, (c) it will not attempt to transfer any interest in the Products until the purchase price has been paid in full, and (d) it is solvent and financially capable of paying the full purchase price for the Products.

8. CHANGES, CANCELLATION, AND RETURN

8.1 Orders accepted by Seller are not subject to change except upon Seller's written agreement.

8.2 Orders accepted by Seller are noncancellable by Purchaser except upon Seller's written consent and payment by Purchaser of a cancellation charge equal to 10% of the price of the affected Products, plus any shipping, insurance, inspection and refurbishment charges; the cost of providing any training, education, site evaluation or other services completed by Seller; and any return, cancellation or restocking fees with respect to any Third Party Products ordered by Seller on behalf of Purchaser. Seller may retain any payments received from Purchaser up to the amount of the cancellation charge. In no event can an order be cancelled by Purchaser or Products be returned to Seller after shipment.

8.3 Seller shall have the right to change the manufacture and/or design of its Products if, in the judgment of Seller, such change does not alter the general function of the Products.

9. FORCE MAJEURE

9.1 Seller shall not be liable for any loss or damage for delay in delivery, inability to install or any other failure to perform due to causes beyond its reasonable control including, but not limited to, acts of government or compliance with any governmental rules or regulations, acts of God or the public, war, civil commotion, blockades, embargoes, calamities, floods, fires, earthquakes, explosions, storms, strikes, lockouts, labor disputes, or unavailability of labor, raw materials, power or supplies. Should such a delay occur, Seller may reasonably extend delivery or production schedules or, at its option, cancel the order in whole or part without liability other than to return any unearned deposit or prepayment.

10. WARRANTY

10.1 Seller warrants that the Products manufactured by Seller and sold hereunder shall be free from defects in material or workmanship under normal use and service for the warranty period. The final assembled Products shall be new although they may include certain used, reworked or refurbished parts and components (e.g., circuit boards) that comply with performance and reliability specifications and controls. Seller's obligation under this warranty is limited, at Seller's option, to the repair or replacement of the Product or any part thereof. Unless otherwise set forth in the Product Warranty attached hereto and incorporated herein by reference, the warranty period shall commence upon the earlier of the date that the Products have been installed in accordance with Section 12.6 hereof (which date shall be confirmed in writing by Seller) or first patient use, and shall continue for 12 consecutive months. Seller makes no warranty for any Products made by persons other than Seller or its affiliates, and Purchaser's sole warranty therefor, if any, is the original manufacturer's warranty, which Seller agrees to pass on to Purchaser, as applicable. The warranty provided by Seller under this Section 10 extends only to the original Purchaser, unless the Purchaser obtains the Seller's prior written consent with respect to any sale or other transfer of the Equipment during the term of the warranty.

10.2 No warranty extended by Seller shall apply to any Products which have been damaged by fire, accident, misuse, abuse, negligence, improper application or alteration or by a force majeure occurrence as described in Section 9 hereof or by the Purchaser's failure to operate the Products in accordance with the manufacturer's instructions or to maintain the recommended operating environment and line conditions; which are defective due to unauthorized attempts to repair, relocate, maintain, service, add to or modify the Products by the Purchaser or any third party or due to the attachment and/or use of non-Seller supplied parts, equipment or software without Seller's prior written approval; which failed due to causes from within non-Seller supplied equipment, parts or software including, but not limited to, problems with the Purchaser's network; or which have been damaged from the use of operating supplies or consumable parts not approved by Seller. In addition, there is no warranty coverage for any transducer or probe failure due to events such as cracking from high impact drops, cable rupture from rolling equipment over the cable, delamination from cleaning with inappropriate solutions, or TEE bite marks. Seller's obligation under this warranty is limited to the repair or replacement, at Seller's option, of defective parts. Seller may effectuate such repair at Purchaser's facility, and Purchaser shall furnish Seller safe and sufficient access for such repair. Repair or replacement may be with parts or products that are new, used or refurbished. Repairs or replacements shall not interrupt, extend or prolong the term of the warranty. Purchaser shall, upon Seller's request, return the noncomplying Product or part to Seller with all transportation charges prepaid, but shall not return any Product or part to Seller without Seller's prior written authorization. Purchaser shall pay Seller its normal charges for service and parts for any inspection, repair or replacement that falls outside the warranty set forth in Section 10.1. Seller's warranty does not apply to consumable materials, disposables, supplies, accessories and collateral equipment, except as specifically stated in writing or as otherwise set

forth in the Product Warranty attached hereto and incorporated herein by reference, nor to products or parts thereof supplied by Purchaser.
10.3 This warranty is made on condition that immediate written notice of any noncompliance be given to Seller and Seller's inspection reveals that Purchaser's claim is covered under the terms of the warranty (i.e., that the noncompliance is due to traceable defects in original materials and/or workmanship).
10.4 Purchaser shall provide Seller with both on-site and remote access to the Products. The remote access shall be provided through the Purchaser's network as is reasonably necessary for Seller to provide warranty services under this Agreement. Remote access will be established through a broadband internet-based connection to either a Purchaser owned or Seller provided secure end-point. The method of connection will be a Peer-to-Peer VPN IPsec tunnel (non-client based) with specific inbound and outbound port requirements.
10.5 Warranty service will be provided without charge during Seller's regular working hours (8:30-5:00), Monday through Friday, except Seller's recognized holidays. If Purchaser requires that service be performed outside these hours, such service can be made available at an additional charge, at Seller's then current rates. The obligations of Seller described in this section are Seller's only obligations and Purchaser's sole and exclusive remedy for a breach of product warranty.
10.6 SELLER MAKES NO WARRANTY OTHER THAN THE ONE SET FORTH HEREIN AND IN THE ATTACHED PRODUCT WARRANTY COVERING THE APPLICABLE PRODUCT CATEGORY. SUCH WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES, AND SUCH CONSTITUTES THE ONLY WARRANTY MADE WITH RESPECT TO THE PRODUCTS AND ANY DEFECT, DEFICIENCY OR NONCONFORMITY IN ANY PRODUCT, SERVICE OR OTHER ITEM FURNISHED UNDER THIS AGREEMENT.
10.7 In the event of any inconsistencies between the terms of this Section 10 and the terms of the attached Product Warranty, the terms of the attached Product Warranty shall prevail.

11. LIMITATION OF LIABILITY

11.1 In no event shall Seller's liability hereunder exceed the actual loss or damage sustained by Purchaser, up to the purchase price of the Products. The foregoing limitation of liability shall not apply to claims for bodily injury or damages to real property or tangible personal property to the extent arising from Seller's negligence or a product defect.
11.2 SELLER SHALL NOT BE LIABLE FOR ANY LOSS OF USE, REVENUE OR ANTICIPATED PROFITS; COST OF SUBSTITUTE PRODUCTS OR SERVICES; LOSS OF STORED, TRANSMITTED OR RECORDED DATA; OR FOR ANY INDIRECT, INCIDENTAL, UNFORESEEN, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES WHETHER BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY THEREOF, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE SALE OR USE OF THE PRODUCTS. THE FOREGOING IS A SEPARATE, ESSENTIAL TERM OF THIS AGREEMENT AND SHALL BE EFFECTIVE UPON THE FAILURE OF ANY REMEDY, EXCLUSIVE OR NOT.

12. INSTALLATION - ADDITIONAL CHARGES

12.1 General. Unless otherwise expressly stipulated in writing, the Products covered hereby shall be installed by and at the expense of Seller except that Seller shall not provide rigging or site preparation services unless otherwise agreed to in writing by Seller for an additional charge. Seller will not install accessory items such as cabinets, illuminators, darkroom equipment or processors for X-Ray and CT equipment, unless otherwise agreed to in writing by Seller.
12.2 Installation by Seller. If Seller specifies it will install the Products, the following applies: subject to fulfillment of the obligations set forth in Section 12.4 below, Seller shall install the Products and connect them to the requisite safety switches and power lines to be installed by Purchaser. Except as otherwise specified below, if such installation and connection are performed by Seller's technical personnel, prices shown include the cost thereof, provided that the installation and connection can be performed within the Continental United States or Puerto Rico and during normal business hours. Any overtime charges or other special expenses shall be additional charges to the prices shown.
12.3 Trade Unions. In the event that a trade union, or unions, or other local labor conditions prevent Seller from performing the above work with its own employees or contractors, then Purchaser shall either make all required arrangements with the trade union, or unions, to permit Seller to complete the work or shall provide the personnel, at Purchaser's sole cost and expense. Moreover, any additional cost incurred by Seller and related to such labor disputes shall be paid by the Purchaser and Seller's obligations under such circumstances will be limited to providing engineering supervision of installation and connection of the Products to existing wiring.
12.4 Purchaser's Obligations. Purchaser shall, at its expense, provide all proper and necessary labor and materials for plumbing service, carpentry work, conduit wiring, and other preparations required for such installation and connection. All such labor and materials shall be completed and available at the time of delivery of the Products by Seller. Additionally, Purchaser shall provide free access to the installation site and, if necessary, safe and secure space thereon for storage of Products and equipment prior to installation by Seller. Purchaser shall be responsible, at its sole cost and expense, for obtaining all permits, licenses and approvals required by any federal, state or local authorities in connection with the installation and operation of the Products, including but not limited to any certificate of need and zoning variances. Purchaser shall provide a suitable environment for the Products and shall ensure, at its sole cost and expense, that its premises are free of asbestos, hazardous conditions and any concealed, unknown or dangerous conditions and that all site requirements are met. Seller shall delay its work until Purchaser has completed the removal of any asbestos or other hazardous materials or has taken any other precautions and completed any other work required by applicable regulations. Purchaser shall reimburse Seller for any increased costs and expenses incurred by Seller that are the result of or are caused by any such delay. In the event that Seller is requested to supervise the installation of the Products, it remains the Purchaser's responsibility to comply with local regulations. Seller is not an architect and all drawings furnished by Seller are not construction drawings.
12.5 Regulatory Reporting. In the event that any regulatory activity is performed by anyone other than Seller's authorized personnel, then Purchaser shall be responsible for fulfilling any and all reporting requirements.
12.6 Completion of Installation. Installation shall be complete upon the conclusion of final calibration and checkout under Seller's standard procedures to verify that the Products meet applicable written performance specifications. Notwithstanding the foregoing, first use of the Products by Purchaser, its agents or employees for any purpose after delivery shall constitute completion of installation.

13. PATENT, COPYRIGHT AND OTHER INFRINGEMENT CLAIMS

13.1 Infringement by Seller. Seller warrants that the Products manufactured by Seller and sold hereunder do not infringe any U.S. patent or copyright. If Purchaser receives a claim that any such Products, or parts thereof, infringe upon the rights of others under any U.S. patent or copyright, Purchaser shall notify Seller immediately in writing. As to all infringement claims relating to Products or parts manufactured by Seller or one of its affiliates:
(a) Purchaser shall give Seller information, assistance and exclusive authority to evaluate, defend and settle such claims.
(b) Seller shall then, at its own expense, defend or settle such claims, procure for Purchaser the right to use the Products, or remove or modify them to avoid infringement. If none of these alternatives is available on terms reasonable to Seller, then Purchaser shall return the Products to Seller and Seller shall refund to Purchaser the purchase price paid by Purchaser less reasonable depreciation for Purchaser's use of the Products. The foregoing states Seller's entire obligation and liability, and Purchaser's sole remedy, for claims of infringement.
13.2 Infringement by Purchaser. If some or all of the Products sold hereunder are made by Seller pursuant to drawings or specifications furnished by Purchaser, or if Purchaser modifies or combines, operates or uses the Products other than as specified by Seller or with any product, data, software, apparatus or program not provided or approved by Seller, then the indemnity obligation of Seller under Section 13.1 shall be null and void and should a claim be made that such Products infringe the rights of any third party under patent, copyright or otherwise, then Purchaser shall indemnify, defend and hold Seller harmless against any liability or expense, including reasonable attorneys' fees, incurred by Seller in connection therewith.

14. DESIGNS AND TRADE SECRETS; LICENSE; CONFIDENTIALITY

14.1 Any drawings, data, designs, software programs or other technical information supplied by Seller to Purchaser in connection with the sale of the Products are not included in the sale of the Products to Purchaser, shall remain Seller's property and shall at all times be held in confidence by Purchaser. Such information shall not be reproduced or disclosed to others without Seller's prior written consent.
14.2 For all goods purchased hereunder which utilize software for their operation, such "Applications Software" shall be licensed to Purchaser under the terms of Seller's Software License Schedule attached hereto.

14.3 Diagnostic/Maintenance Software is not included under Section 14.2 above, is available only as a special option under a separate Diagnostic Materials License Agreement, and may be subject to a separate licensing fee.
14.4 Seller and Purchaser shall maintain the confidentiality of any information provided or disclosed to the other party relating to the business, customers and/or patients of the disclosing party, as well as this Agreement and its terms (including the pricing and other financial terms under which the Purchaser will be purchasing the Products). Each party shall use reasonable care to protect the confidentiality of the information disclosed, but no less than the degree of care it would use to protect its own confidential information, and shall only disclose the other party's confidential information to its employees and agents having a need to know this information. The obligations of confidentiality set forth herein shall not apply to any information in the public domain at the time of disclosure or that is required to be disclosed by court order or by law.

15. ENGINEERING CHANGES
15.1 Seller makes no representation that engineering changes which may be announced in the future will be suitable for use on, or in connection with, the Products.

16. ASSIGNMENT
16.1 Neither party may assign any rights or obligations under this Agreement without the prior written consent of the other and any attempt to do so shall be void, except that Seller may assign this Agreement without consent to any subsidiary or affiliated company, and may delegate to authorized subcontractors or service suppliers any work to be performed under this Agreement so long as Seller remains liable for the performance of its obligations under this Agreement. This Agreement shall inure to and be binding upon the parties and their respective successors, permitted assigns and legal representatives. Seller shall have no obligations under this Agreement to any assignee of Purchaser that is not approved by Seller in advance.

17. COSTS AND FEES
17.1 In the event that any dispute or difference is brought arising from or relating to this Agreement or the breach, termination or validity thereof, the prevailing party shall be entitled to recover from the other party all reasonable attorneys' fees incurred, together with such other expenses, costs and disbursements as may be allowed by law.

18. MODIFICATION
18.1 This Agreement may not be changed, modified or amended except in writing signed by duly authorized representatives of the parties.

19. GOVERNING LAW; WAIVER OF JURY TRIAL
19.1 This Agreement shall be governed by the laws of the Commonwealth of Pennsylvania.
19.2 EACH OF THE PARTIES EXPRESSLY WAIVES ALL RIGHTS TO A JURY TRIAL IN CONNECTION WITH ANY DISPUTE UNDER THIS AGREEMENT.

20. COST REPORTING
20.1 Purchaser agrees that it will fully and accurately account for and report in all cost reports and otherwise fully and accurately disclose to federal and state health care program payors and fully and accurately reflect where and as appropriate to the applicable reimbursement methodology, all services and other items, including any and all discounts, received from Seller under this Agreement, in compliance with all applicable laws, rules and regulations, including but not limited to the Social Security Act and implementing regulations relating to Medicare, Medicaid and other federal and state health care reimbursement programs.

21. INTEGRATION
21.1 These terms and conditions, including any attachments or other documents incorporated by reference herein, constitute the entire agreement and the complete and exclusive statement of agreement with respect to the subject matter hereof, and supersede any and all prior agreements, understandings and communications between the parties with respect to the Products.

22. SEVERABILITY; HEADINGS
22.1 No provision of this Agreement which may be deemed unenforceable will in any way invalidate any other portion or provision of this Agreement. Section headings are for convenience only and will have no substantive effect.

23. WAIVER
23.1 No failure and no delay in exercising, on the part of any party, any right under this Agreement will operate as a waiver thereof, nor will any single or partial exercise of any right preclude the further exercise of any other right.

24. NOTICES
24.1 Any notice or other communication under this Agreement shall be deemed properly given if given in writing and delivered in person or mailed, properly addressed and stamped with the required postage, to the intended recipient at its address specified on the face hereof. Either party may from time to time change such address by giving the other party notice of such change in accordance with this section.

25. RIGHTS CUMULATIVE
25.1 The rights and remedies afforded to Seller under this Agreement are in addition to, and do not in anyway limit, any other rights or remedies afforded to Seller by any other agreement, by law or otherwise.

26. END USER CERTIFICATION
26.1 Purchaser represents, warrants and covenants that it is acquiring the Products for its own end use and not for reselling, leasing or transferring to a third party (except for lease-back financings).

03/2012 Rev

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Mathew Hayes - (336) 263-4273

Software License Schedule to the Siemens Medical Solutions USA, Inc. General Terms and Conditions

1. DEFINITIONS: The following definitions apply to this Schedule:
"Agreement" shall mean the attached (i) Quotation for Products and/or Services including the Terms and Conditions of Sale and applicable schedules; and/or (ii) Software License Agreement describing the software licensed herein and the specific system for which the license is issued.
"Licensor" shall mean Siemens Medical Solutions USA, Inc.
"Licensee" shall mean the end-user to whom Licensor provides Software or Documentation for its internal use under the Agreement.
"Software" shall mean the software described in the attached Agreement, including the following as contained therein: (i) software programs consisting of a series of statements or instructions to be used directly or indirectly in a programmable controller or computer to bring about a certain result and (ii) databases consisting of systemized collections of data to be used or referenced directly or indirectly by a programmed controller or computer. Notwithstanding the foregoing, "Software" does not include "firmware" as such term is conventionally understood. Diagnostic/Maintenance Software also is not included within the scope of the Software licensed under this Schedule, and is available only as a special option under a separate Diagnostic Materials License Agreement and may be subject to a separate licensing fee.
"Documentation" shall mean the documents and other supporting materials which are intended to support the use of an associated product, including (but not limited to) instructions, descriptions, flow charts, logic diagrams and listings of the Software, in text or graphic form, on machine readable or printed media.
"Designated Unit" shall mean a single control unit or computer identified on the first page of the Agreement, on which Software licensed hereunder may be used by Licensee.
2. SCOPE: The following terms and conditions shall apply to all Software and Documentation provided by Licensor to Licensee under the Agreement (whether included with other products listed in the Agreement or listed separately in the Agreement), together with any updates or revisions thereto which Licensor may provide to Licensee, and all copies thereof, except any Software and/or Documentation licensed directly by Licensor's supplier under a separate end-user license agreement accompanying the Software or the Documentation, in which case Licensee agrees to be bound by that license agreement as a condition to using the Software and/or Documentation. Except as expressly provided herein, and provided that in no event shall the warranties or other obligations of Licensor with respect to such Software or Documentation exceed those set forth in this Schedule, this Schedule shall be subject to the liability limitations and exclusions and other terms and conditions set forth in the Agreement. **ANY USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO USE ON THE DESIGNATED UNIT, WILL CONSTITUTE LICENSEE'S AGREEMENT TO THIS SOFTWARE LICENSE SCHEDULE (OR RATIFICATION OF ANY PREVIOUS CONSENT).**
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4. PROPRIETARY PROTECTION AND CONFIDENTIALITY: Ownership of and title to the Software and Documentation and all copies, in any form, licensed under this Schedule are and will remain in Licensor or its suppliers at all times. Licensee shall not (i) remove any copyright, trade secret or other proprietary right notices contained on or in the Software or Documentation as provided by Licensor, (ii) reproduce or modify any Software or Documentation or copy thereof, (iii) reverse assemble, reverse engineer or decompile any Software, or copy thereof, in whole or in part (except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation), (iv) sell, transfer or otherwise make available to others the Software or Documentation, or any copy thereof, except as expressly permitted by this Schedule, or (v) apply any techniques to derive any trade secrets embodied in the Software or Documentation. Licensee shall take all appropriate actions to ensure that: (i) the Software does not leave the Designated Unit's equipment location as set forth above, (ii) the Software is not copied by Licensee or any third parties, and (iii) the Software is not used in any equipment other than the Designated Unit. Licensee shall secure and protect the Software and Documentation and copies thereof from disclosure and shall take such actions with its employees and other persons who are permitted access to the Software or Documentation or copies as may be necessary to satisfy Licensee's obligations hereunder. Prior to disposing of any computer medium, computer memory or data storage apparatus, Licensee shall ensure that all copies of Software and Documentation have been erased therefrom or otherwise destroyed. In the event that Licensee becomes aware that any Software or Documentation or copies are being used in a manner not permitted by the license, Licensee shall immediately notify Licensor in writing of such fact and if the person or persons so using the Software or Documentation are employed or otherwise subject to Licensee's direction and control, Licensee shall use reasonable efforts to terminate such impermissible use. Licensee will fully cooperate with Licensor so as to enable Licensor to enforce its proprietary and property rights in the Software. Licensee agrees that, subject to Licensee's reasonable security procedures, Licensor shall have immediate access to the Software at all times and that Licensor may take immediate possession thereof upon termination or expiration of the associated license or this Schedule. Licensee's obligations under this paragraph shall survive any termination of a license, the Schedule or the Agreement.
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Revised 03/15/05

SIEMENS

Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Mathew Hayes - (336) 263-4273

TRADE-IN EQUIPMENT REQUIREMENTS

THE FOLLOWING APPLIES ONLY TO THE EXTENT THAT THE QUOTATION INCLUDES AN EQUIPMENT TRADE-IN. THESE REQUIREMENTS ARE IN ADDITION TO ANY OTHER REFERENCED TERMS AND CONDITIONS ON THE QUOTATION AND SHALL REMAIN IN EFFECT REGARDLESS OF ANY CONTRARY LANGUAGE IN THE QUOTATION.

This Quotation includes the trade-in equipment described herein and referenced by either the Project Number identified in the Quotation hereof (non-Ultrasound) or the Trade Allowance Part Number (Ultrasound) as further described in the associated Trade Sheet which is incorporated herein by reference. Purchaser certifies that the description of the trade-in equipment as set forth on the Trade Sheet is a true and accurate representation of the equipment, and that the equipment is in good working condition unless otherwise noted on the Trade Sheet.

The trade-in equipment must be made available for removal no later than turnover of the new equipment. Purchaser must vacate the room of all items not listed on the Trade Sheet, or otherwise clearly identify all items listed on the Trade Sheet, prior to the start of the de-installation. If this is not done, Seller will have no liability for items which are subsequently removed or scrapped. If the de-installation or return of the trade-in equipment is delayed by Purchaser for reasons other than a force majeure event, or if upon inspection by Seller it is determined that the equipment does not meet the manufacturer's operating specifications, or if any items listed as included on the Trade Sheet are not made available at the time of de-installation, then trade-in value will be re-evaluated and any loss in value or additional costs incurred by Seller shall be deducted from the established trade-in value and the pricing set forth on this Quotation will be adjusted by change order. In the event that access to the trade-in equipment is denied past 14 days post-turnover, then Purchaser shall pay to Seller a rental fee in the amount 10% of the total trade-in value plus any additional value provided by an Elevate/Promotional program included in this Quotation (no less than $1000) for each month, or part thereof, that access is denied. In addition, if the purchase and installation of the new equipment covered by this Quotation is not completed, then Seller shall invoice Purchaser for all costs and expenses incurred by Seller in connection with the de-installation and removal of the trade-in equipment, including but not limited to labor, materials, rigging out, and transportation, which costs shall be paid by Purchaser within thirty (30) days of the invoice date.

Purchaser further acknowledges and agrees that (i) the trade-in equipment will be free and clear of all liens and encumbrances including, but not limited to, unpaid leases and loans, and that upon request, it will execute a bill of sale or other documents reasonably satisfactory to Siemens to transfer title and ownership of the equipment to Seller, (ii) it is Purchaser's sole responsibility to delete all protected health information and any other confidential information from the equipment prior to de-installation, without damaging or cannibalizing the equipment or otherwise affecting the operation of the equipment in accordance with its specifications, (iii) the equipment, including all updates, upgrades, modifications, enhancements, revisions, software, S/W disks and manuals, shall be returned to Siemens in good operating condition, reasonable wear and tear excepted, and (iv) to the extent not prohibited by applicable law, Purchaser shall indemnify and hold Seller harmless from and against any and all claims, demands, causes of action, damages, liability, costs and expenses (including reasonable attorney's fees) resulting or arising from Purchaser's failure to comply with item (i) above.

FOR MR SYSTEMS: cryogen levels must be least 75% upon time of de-installation. FOR MOBILE SYSTEMS: system must be road worthy and a state issued title transferring ownership to Seller must be received by Seller prior to the removal of the mobile system. FOR MODALITY TRADE SYSTEMS (non-Ultrasound): The trade-in equipment must be available for inspection within two weeks of the scheduled de-installation date. In addition, Purchaser must provide a clear path for the removal of the trade-in equipment. Any additional costs due to the need to use a larger rig (other than a standard 80 ton rig), as well as any construction activities, street closings, permits, etc., required to de-install/remove the equipment are out-of-scope costs and will be the responsibility of Purchaser.

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 309-6967

SIEMENS REPRESENTATIVE
Mathew Hayes - (336) 263-4273

CT Warranty Information

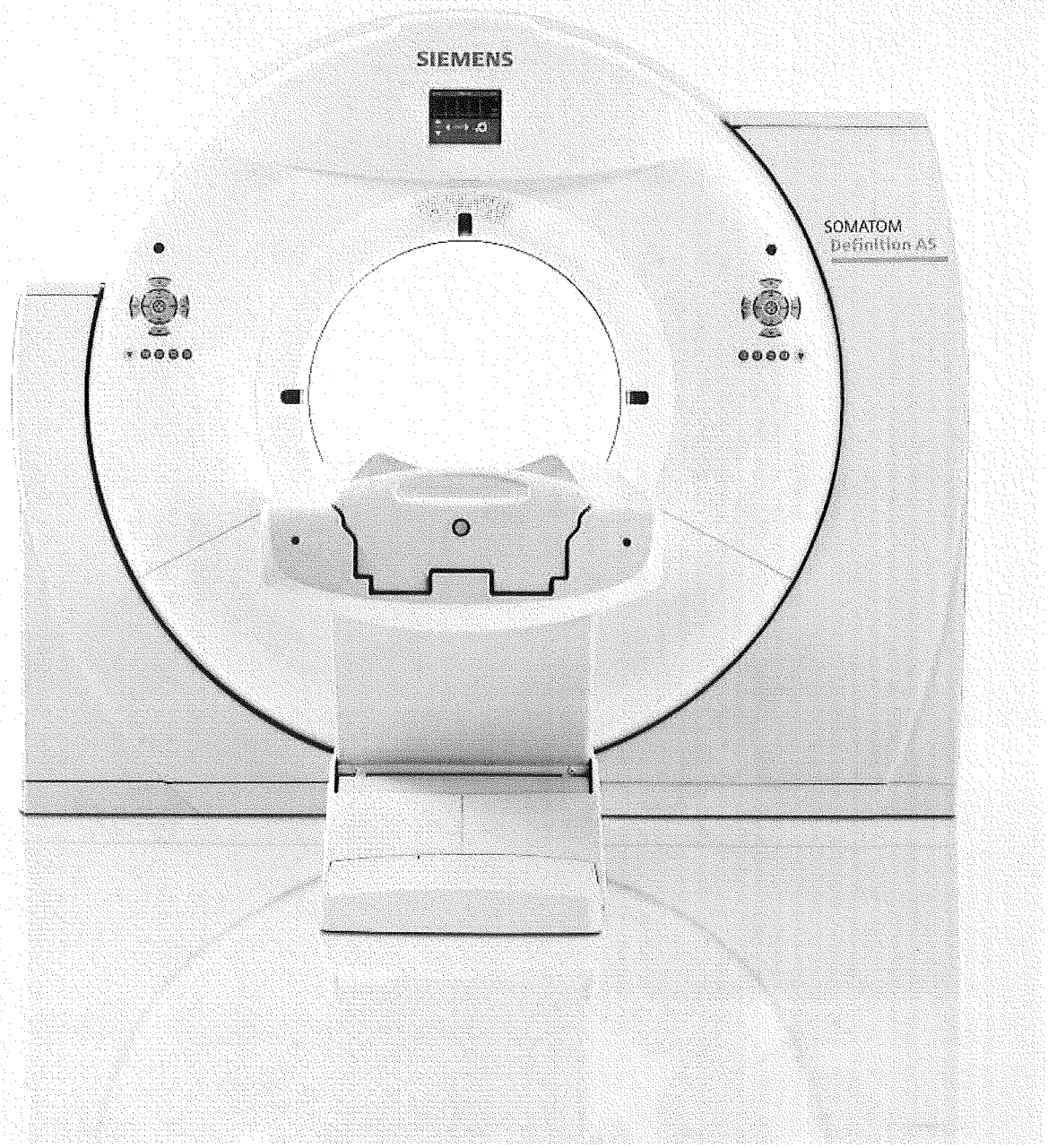
Equipment (New Systems and "Proven Excellence" Refurbished Systems Only)	Period of Warranty[1]	Coverage	
CT System (not including consumables)	12 month	Full Warranty (parts & labor, including all tubes)	
Post-Warranty (after expiration of system warranty) – Replacement parts only!			
Straton	Prorated to a maximum of 160,000 scan seconds or 12 month whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (160,000 – scan-seconds used) / 160,000 * 100
Single Tank tube with rotating anode (non spiral) (Rotanx)	Prorated to a maximum of 60,000 scans or 12 month whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (60,000 – scans used) / 60,000*100
Single Tank tube with rotating anode (spiral) (Rotanx)	Prorated to a maximum of 130,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (130,000 – scanseconds used) / 130,000 * 100
Opti 151 and Opti 157 tube	Prorated to a maximum of 60,000 scans or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (60,000 – scans used) / 60,000 * 100
All other Dura tubes and Opti 131 tube	Prorated to a maximum of 130,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (130,000 – scanseconds used) / 130,000 * 100
Dura Akron B tubes	Prorated to a maximum of 150,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (150,000 – scanseconds used) / 150,000 * 100
Dura Akron Q tubes	Prorated to a maximum of 120,000 scanseconds or 12 months whichever occurs first	Prorated credit given to customer against replacement cost	credit percentage = (120,000 – scanseconds used) / 120,000 * 100
Cathode-ray tubes (CRT)	12 months		
Spare Parts	6 months	Parts only	
Consumables	Not covered		

Note: Optional extended warranty coverage can be obtained by purchase of a service agreement.

[1] Period of warranty commences from the date of first use or completion of installation, whichever occurs first. In the event the completion of installation is delayed for reasons beyond Siemens' control, the stated warranty period shall commence 60 days after delivery of equipment.

EXHIBIT 3

Brochure Describing Features of
Siemens SOMATOM Definition AS40



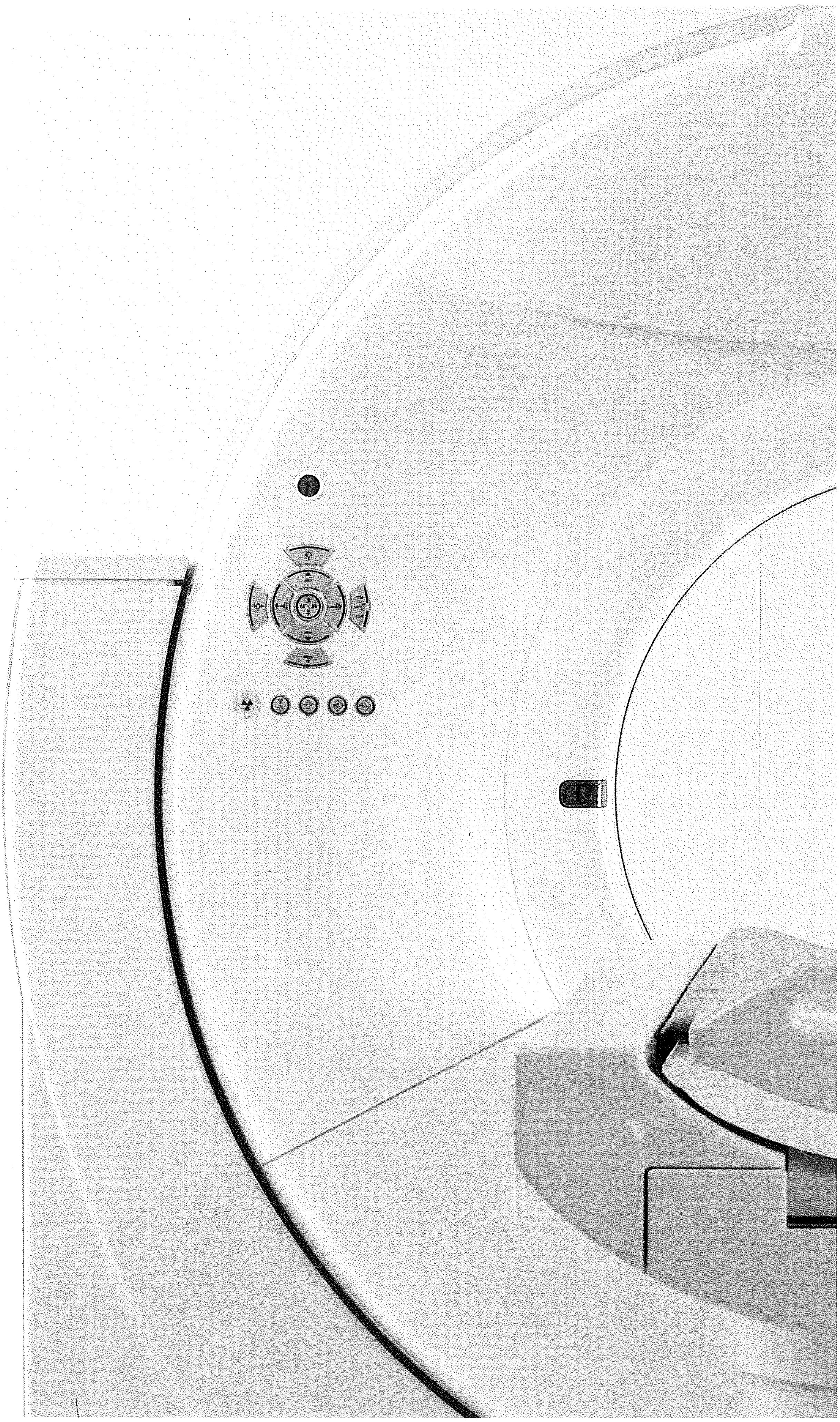
Maximize Outcome. Minimize Dose.

SOMATOM Definition AS

Datasheet for AS 40-slice configuration
syngo CT 2011A

Answers for life.

SIEMENS



Maximize Outcome.

Over the recent years Computed Tomography has found its way into almost every clinical discipline. Especially with the first generation of the SOMATOM® Definition AS from 2007, Siemens introduced a scanner that for the first time was capable of adapting to virtually every patient and every clinical question.

Now Siemens is again breaking barriers: With the new SOMATOM Definition AS you have the possibility to maximize your clinical outcome – meaning to have best clinical results, but with significantly less resources bound to the CT system. The ultimate goal is to provide you with more time for patients – or patient-centric productivity.

For this Siemens introduced its new FAST (Fully Assisting Scanner Technologies) research and development philosophy. These new FAST features available on the new SOMATOM Definition AS allow to simplify typically time consuming and complex procedures during a CT examination: The scanning process gets more intuitive and the results become more reproducible. Integrating the capabilities of *syngo*.via the complete examination – from scan preparation to data evaluation – is streamlined, leading to a more reliable diagnosis with less patient burden.

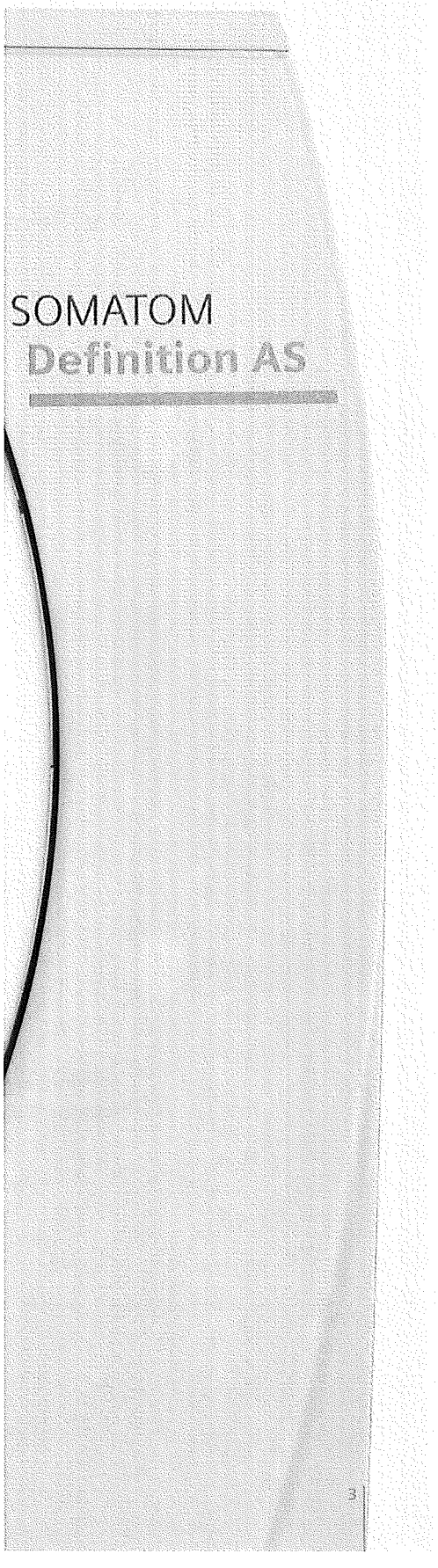
Minimize Dose.

From the very beginning, one of the most important topics for Siemens CT has been patient safety. And in Computed Tomography, patient safety translates primarily into dose reduction. This is why since decades, Siemens has always been at the forefront to reduce radiation dose to the lowest possible level.

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. Over the years, Siemens has been highly successful in integrating many innovations into the Siemens scanners that significantly reduce radiation dose in comparison to other systems available on the CT market. For example, the Adaptive Dose Shield, introduced with the first SOMATOM Definition AS in 2007, or IRIS – the Iterative Reconstruction in Image Space – in 2009, with the capability to significantly reduce dose or improve image quality*.

With the new SOMATOM Definition AS, Siemens again introduces several innovative CARE features like CARE kV, the first automated, exam-specific voltage setting to optimize CNR and reduce dose by up to 60%. To give our customers every means to minimize dose and consequently take best care of their patients well-being.

* In clinical practice, the use of IRIS 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.



System Configuration

Standard System Hardware
0.33 s rotation time
0 MHU STRATON® X-ray tube
z-Sharp™ Technology
Adaptive Dose Shield
Multislice UFC™ (Ultra Fast Ceramic) Detector
80 kW generator
CT patient table (1,600 mm scan range, 212 kg/467 lbs table load)
40 fps image reconstruction
Optional System Hardware
UHR (Ultra high resolution)/ z-UHR (z-Ultra high resolution)
CT patient table (2,000 mm scan range, 227 kg/500 lbs table load)
Multi-purpose patient table (307 kg/676 lbs table load)
Additional 19" (48 cm) flat screen monitor
Dual 19" (48 cm) flat screen monitor with dual display functionality
Standard Workplaces
syngo® Acquisition Workplace
19" (48 cm) flat screen monitor
CD/DVD storage
Optional Workplaces
syngo CT Workplace
syngo MultiModality Workplace
syngo.via
Additional 19" (48 cm) flat screen monitor
Dual 19" (48 cm) flat screen monitor with dual display functionality
Enhanced graphics card for *syngo* MultiModality Workplace

Standard System Software
syngo Examination
syngo Viewing
syngo Filming
syngo Archiving & Network
Standard FAST Applications
FAST Adjust
FAST Scan Assistant
Standard CARE Applications
CARE Filter
CARE Bolus CT
CARE Topo
CARE Dose4D
CARE kV
CARE Child – Pediatric Protocols
CARE Profile
CARE Dashboard
Standard Applications on *syngo* Acquisition Workplace
syngo 3D Real Time MPR
syngo 3D SSD (Surface Shaded Display)
syngo Volume Calculation
syngo Dynamic Evaluation
syngo VRT (Volume Rendering Technique)
CT-Angiography
Neuro BestContrast
Adaptive Signal Boost
WorkStream4D™ (3D-Recon)

For more information on applications please refer to the Clinical Engine and Clinical Applications Brochure.

System Configuration

Optional System Software
Adaptive 4D Spiral
Extended FoV (Field of View)
HD FoV (Field of View)
syngo Security Package
syngo Expert-i
syngo HeartView CT (including Adaptive ECG-Pulsing and Adaptive Cardio Sequence)
Optional Applications for CT Intervention
Adaptive 3D Intervention Suite
Adaptive 3D Intervention
Intervention Pro
i-Fluoro
i-Control
Optional FAST Applications
FAST Planning
FAST Cardio Wizard
FAST Spine
Optional CARE Applications
Sinogram Affirmed Iterative Reconstruction (SAFIRE)**
Iterative Reconstruction in Image Space (IRIS)*
Adaptive ECG Pulsing™ and Adaptive Cardio Sequence (included in *syngo* HeartView CT)
CARE Contrast III
X-CARE
Optional Applications for *syngo* Acquisition Workplace
syngo Cardio BestPhase Plus
syngo Calcium Scoring
syngo Fly Through
syngo Dental CT
syngo Osteo CT
syngo Pulmo CT
syngo Volume Perfusion CT Neuro
syngo Volume Perfusion CT Body
syngo Image Fusion
Respiratory Gating and Triggering CT

Optional Applications for *syngo* CT Workplace and *syngo* MultiModality Workplace
syngo InSpace4D™
syngo InSpace EP
syngo InSpace Lung Parenchyma Evaluation
syngo Fly Through
syngo Dental CT
syngo Osteo CT
syngo Pulmo CT
syngo HeartView CT (including Adaptive ECG-Pulsing)
syngo Circulation
syngo Circulation Plaque Analysis
syngo Circulation PE Detection***
syngo Circulation PE Detection Basic*
MI Hybrid Visualization
syngo InSpace4D Advanced Vessel Analysis
syngo Calcium Scoring
syngo Volume Perfusion CT Neuro
syngo Neuro DSA CT (Digital Subtraction Angiography)
syngo Neuro PBV CT
syngo Volume Perfusion CT Body
syngo CT Oncology
syngo Colonography CT (incl. Virtual Dissection)
syngo Colonography CT with PEV (Polyp Enhanced Viewing)
syngo LungCARE CT
syngo LungCAD
syngo Image Fusion
syngo Expert-i
syngo Security Package
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Wide Range of individual applications
CT Cardio-Vascular Engine
CT Acute Care Engine
CT Oncology Engine
CT Neuro Engine

For more information on applications please refer to the Clinical Engine and Clinical Applications Brochure.

* For U.S. only
** The option requires 510(k) review and is not commercially available in the U.S.
*** Not available in the U.S.

System Hardware

Gantry	
Aperture	78 cm
Scan field	50 cm 65 cm with HD FoV* 78 cm with extended FoV*
Tilt	± 30°
Rotation time	0.33, 0.5, 1 s
Three laser light markers	Horizontal, sagittal, and vertical laser light showing the isocenter position of the scan plane
Integrated display panel	Gantry front display showing current scan parameters such as kV, mA, scan time, table position, gantry tilt, and ECG trace**
Gantry front and rear* control panels	For convenient patient positioning (e.g. in case of trauma or interventional exams) Gantry tilt control from the operator's console
Continuously rotating tube-detector unit with optimized geometry for high-resolution data acquisition across the entire scan field	
Tube Assembly	
Tube	STRATON MX P High-performance CT X-ray tube
Tube current range	60–666 mA
Tube voltage	70, 80, 100, 120, 140 kV
Tube anode heat storage capacity	0 MHU (0.6 MHU capacity combined with 7.3 MHU/min (5,400 kJ/min) cooling rate is comparable to the performance of a conventional tube with approximately 50 MHU (37,000 kJ) anode heat storage capacity)
Cooling rate	7.3 MHU/min
Focal spot size according to IEC 60336	0.7 x 0.7 mm/7°* 0.9 x 0.9 mm/7°
z-Sharp Technology	The unique STRATON X-ray tube utilizes an electron beam that creates two precise focal spots alternating 4,608 times per second. This doubles the X-ray projections at each detector element. The corresponding detector electronics enable a virtually simultaneous readout of two projections for each detector element, resulting in a full two-slice acquisition per detector row. The two projections are overlapping, what results 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. This provides scan speed independent visualization of 0.33 mm isotropic voxels and a corresponding minimization of spiral artifacts at any position within the scan field.
Adaptive Dose Shield	
The first dynamic tube collimation that protects the patient from clinically irrelevant radiation in Spiral CT	
Computer-controlled monitoring of anode temperature	
CARE Filter	
Al equivalent	tube: 6.8 mm Al
Beam limiting device	collimator: 0.5 mm Al, 0.3 mm Ti (equivalent to 2.0 Al)
Generator	
Max. power	80 kW

* Optional
** Optional for *syngo* HeartView CT

System Hardware

Data Acquisition System	
UFC Detector	Ultra short afterglow. Optimal for sub-second and multislice acquisition.
Max. number of slices/rotation	40 (acquired slices); 120 (reconstructed slices)
Number of detector rows	20
Number of detector electronic channels	40
Number of detector elements	14,720
Total channels per slice	1,472
Number of projections	up to 4,608/360°
Sequence acquisition modes	40 x 0.6 mm, 20 x 0.6 mm, 8 x 0.6 mm (UHR), 2 x 1 mm, 6 x 1.2 mm, 16 x 1.2 mm, 12 x 1.2 mm, 1 x 5 mm, 1 x 10 mm
Spiral acquisition modes	16 x 0.3 mm (z-UHR), 40 x 0.6 mm, 8 x 0.6 mm (UHR), 16 x 1.2 mm
Adaptive Signal Boost	The Adaptive Signal Boost amplifies low signal areas of the CT data and further reduces streaks and noise in the image especially for larger patients
Adaptive 4D Spiral mode*	Spiral scan mode for a larger perfusion range than the detector width
z-UHR (Ultra High Resolution)*	Siemens' proprietary z-UHR enables previously unachievable image detail with an isotropic resolution of 30 lp/cm (0.17 mm) at 0% MTF (± 10%). The combination of z-Sharp Technology and z-UHR offers an isotropic detail in the range of flat panel or Micro CT technology.
Standard Patient Table	
Max. table load	212 kg/467 lbs
Table feed speed	1–200 mm/s
Vertical table travel range	51–92 cm (at table top)
Vertical travel speed	20–50 mm/s
Scannable range	160 cm
Distance between gantry front and table base	40 cm
Optional Patient Table 2,000 mm	
Max. table load	227 kg/500 lbs
Table feed speed	1–200 mm/s
Vertical table travel range	48–92 cm (at table top)
Vertical travel speed	20–50 mm/s
Scannable range	200 cm
Distance between gantry front and table base	40 cm
Optional Multi-purpose Patient Table	
Max. table load	307 kg***/676 lbs***
Table feed speed	1–200 mm/s
Vertical table travel range	55–92 cm
Vertical travel speed	20–50 mm/s
Scannable range	200 cm
Distance between gantry front and table base	40 cm
Additional exchangeable table tops*	High-capacity patient and trauma table top; RTP table top
Optional Foot Pedals**	
4 pairs of foot pedals are provided on the bottom edge of the patient table allowing table lifting and lowering from various positions	

* Optional
** Not available for standard patient table (1,600 mm scan range)
*** Optional with high-capacity table top

syngo Workplaces

syngo Acquisition Workplace (AWP)

The *syngo* Acquisition Workplace provides an intelligent and reliable workflow for data acquisition, image reconstruction, and routine postprocessing at the CT scanner. Built on the unique *syngo* platform, the *syngo* Acquisition Workplace is intuitive and user friendly.

syngo CT Workplace (CTWP)*

The *syngo* CT Workplace is a dedicated CT processing workplace that provides instant access to image and scan data via a shared database with the *syngo* Acquisition Workplace. With access to our comprehensive portfolio of CT clinical applications, the *syngo* CT Workplace can be customized to further enhance clinical performance.

syngo MultiModality Workplace (MMWP)*

syngo MultiModality Workplace provides the unique advantage of an efficient multi-modality diagnostic workflow at a single workplace. Based on the unique *syngo* platform, it manages the clinical diagnostic workflow anywhere within the clinical environment. With the *syngo* MultiModality Workplace radiologists and clinicians benefit from access to our comprehensive *syngo* applications for Computed Tomography, Magnetic Resonance, PET and SPECT imaging, Angiography, and Radiation Therapy Planning.

Image Reconstruction	
Real-time display	Real-time image display (512 x 512) during spiral acquisition
Slice thickness	0.6–15 mm
Recon field	5–50 cm 5–65 cm with HD FoV*/** 5–78 cm with extend FoV*/**
Recon time	40 fps
Recon matrix	512 x 512
HU scale	–1,024 to +3,071
Extended HU scale	–10,240 to +30,710
Wide range of selectable slice thickness for prospective and/or retrospective reconstruction	
Raw Data	
Capacity	900 GB
External USB 2.0 disks for quick and easy raw data storage are supported	

* Optional

** 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 and image artifacts may appear, depending on the anatomy scanned

syngo Workplaces

Workplace	AWP	CTWP	MMWP
High-performance Computer	Quad Core 2.66 GHz*	2 x Xeon 3.0 GHz*	2 x Dual Core Xeon 3.0 GHz*
Graphics Accelerator	NVIDIA Quadro FX 1700 for fast 3D postprocessing	NVIDIA Quadro FX 3500 for fast 3D postprocessing	NVIDIA Quadro FX 3500 for fast 3D postprocessing
	–	Enhanced graphics card* additionally accelerates applications	Enhanced graphics card* additionally accelerates applications
Standard Monitor	19" (48 cm) flat screen	19" (48 cm) flat screen	19" (48 cm) flat screen
	1,280 x 1,024 resolution	1,280 x 1,024 resolution	1,280 x 1,024 resolution
	1,024 x 1,024 image display matrix	1,024 x 1,024 image display matrix	1,024 x 1,024 image display matrix
	0.29 mm pixel size	0.29 mm pixel size	0.29 mm pixel size
Additional Monitor**	Yes	–	–
Dual Monitor***	Yes	Yes	Yes
RAM Storage	8 GB	12 GB	8 GB
RAID	Software RAID 0 for enhanced read/write performance	Software RAID 0 from AWP via Gigabit Link for enhanced read/write performance	–
Image Storage	147 GB; 260,000 uncompressed images	Shared database with *syngo* Acquisition Workplace	147 GB; 260,000 uncompressed images
Additional Storage	DVD DICOM drive: 4.7 GB DVD media 8,000 images Write-RW/+RW/-DL/Read CD-R: 700 MB 1,100 images	DVD DICOM drive: 4.7 GB DVD media 8,000 images Write-RW/+RW/-DL/Read CD-R: 700 MB 1,100 images	DVD DICOM drive: 4.7 GB DVD media 8,000 images Write-RW/+RW/-DL/Read CD-R: 700 MB 1,100 images
	External USB 2.0 disks for quick and easy raw data storage are supported. External USB memory stick for image data.	–	–
DICOM Viewer	Included on each CD; automatically started on the viewer's PC	Included on each CD; automatically started on the viewer's PC	Included on each CD; automatically started on the viewer's PC

* Or equivalent

** Optional. Additional monitor for replication of primary monitor at remote location. Distance from host up to 30 m.

*** Optional. Dual monitor enables the simultaneous display of two scans on two monitors within the 3D task card, ideally used for comparison of follow-up studies or native and contrast-enhanced scans.

Standard System Software: *syngo* Examinations

Scan Protocol Assistant	
Up to 10,000 protocols can be edited, modified, and stored	
Easy and intuitive way to change and manage scan protocols	
Automatic Patient Positioning	
Two user-configurable buttons on the gantry panel	
One touch, quick patient positioning for preselected clinical protocols – e.g. head, thorax	
Topogram	
Length	128–1,559/1,970* mm
Scan times	1.5–16/20* s
Views	a.p., p.a., lateral
Real-time topogram	
Manual interruption possible once desired anatomy has been imaged	
Patient Communication	
Integrated patient intercom	
Automatic Patient Instruction (API)	freely recordable; 30 API text pairs; presets in nine languages available
Views	a.p., p.a., lateral
Sequence Acquisition	
Reconstructed slice widths	0.6, 0.75, 1, 1.2, 1.5, 2, 2.4, 3, 3.6, 4, 4.8, 5, 6, 7, 7.2, 8, 9, 10, 12, 14.4, 15, 20 mm
Temporal resolution	166 ms, 250 ms, 500 ms, down to 83 ms (with *syngo* HeartView CT*)
Partial scan times (260°)	0.24, 0.36, 0.72 s
No. of uninterrupted scans per range	100
No. of ranges per protocol	33
Scan cycle time (min. scan cycle time depending on rotation time)	0.5 s*/0.75 s–60 s (± 10%)
Acquisition with or without table feed	
Automatic clustering of scans	
Dynamic Multiscan: Multiple (continuous) sequence scanning without table movement for fast dynamic contrast studies with maximum slice thickness of 20 mm	
Multislice Spiral Acquisition	
Reconstructed slice widths	0.4**, 0.5**, 0.6, 0.75, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm
Scan times full scan (360°)	0.33, 0.5, 1 s
Slice increment	0.1–10 mm
Pitch factor	0.35–1.5, down to 0.15 (*syngo* HeartView CT)*, down to 0.09 (Respiratory Gating and Triggering CT)*
Spiral scan time	max. 100 s
Scan length	max. 1540 mm/1940 mm*
No. of ranges per protocol	33
Automatic clustering of scans	
Optimized special reconstruction algorithm (PFO: Posterior Fossa Optimization) for reduction of beam hardening artifacts in head images	

* Optional

** Optional, with z-UHR option

Standard System Software: *syngo* Examinations

Patient Registration	
Direct input of patient information on *syngo* Acquisition Workplace immediately prior to scan	
Pre-registration of patients at any time prior to scan	
Special emergency patient registration (allows examination without entering patient data before scanning)	
Transfer of patient information from HIS/RIS via DICOM Get Worklist	
Transfer of examination information from scanner into HIS/RIS via MPPS (Modality Performed Procedure Step)	
Sureview: Siemens' Patented Solution for Multislice CT Reconstruction	
Excellent for clinical workflow: Forget about compromises in your clinical workflow. Just specify the slice thickness in your protocols according to your clinical needs. SureView automatically takes care of providing excellent volume image quality – with exceptional performance.	
Multiply your clinical performance with SureView: High-quality imaging at any scanning speed. SureView allows the CT scanner to automatically select the necessary pitch value to achieve the coverage and scan time defined by you, while keeping selected slice thickness and image quality.	
Includes advanced cone beam reconstruction algorithms for elimination of cone beam artifacts	
Auto Field of View Adaption	
When positioning the scan range, the width of the range is automatically adapted to cover the whole body of the patient	
CINE Display	
Display of image sequences	
Automatic or interactive with mouse control	
Max. image rate	30 frames/s
Image Filter	
Advanced image algorithms	• LCE: Low Contrast Enhancement for improving low contrast detectability • HCE: High Contrast Enhancement for increased sharpness of high contrast structures • ASA: Advanced Smoothing Algorithm edge preserving smoothing filter, dedicated to Cardiac exams
Neuro BestContrast	
Achieve a significant increase in contrast without an increase in noise or dose	
e-Logbook	
Tool to collect patient information for statistics, documentation, and research	• view • archive • print • export
***syngo* Dynamic Evaluation**	
Evaluation of contrast enhancement in organs and tissues	
Calculation of	• time-density curves (up to 5 ROIs) • peak-enhancement images • time-to-peak images

Standard System Software: *syngo* Viewing

Windowing
Window width and center freely selectable
Single window
Double window (e.g. bone/soft tissue)
Multiple window settings for multi-image display
Organ-specific window settings, e.g. for soft tissue and bones
2D Postprocessing
Image zoom and pan
Image manipulations • averaging, subtraction • reversal of gray-scale values • mirroring
Evaluation Tools
Parallel evaluation of more than 10 Regions of Interest • circle • irregular • polygonal
Statistical evaluation • area/volume • standard deviation • mean value • min./max. values • histogram
Profile cuts • horizontal • vertical • oblique
Distance measurement
Angle measurement
Online measurement of a 5 x 5 pixel size ROI
Freely selectable positioning of coordinate system
Crosshair
Image annotation and labeling

Standard System Software: *syngo* Filming and *syngo* Archiving & Networking

Filming
Digital film documentation, connection to a suitable digital camera
Connection via DICOM Basic print
Automatic filming
Interactive virtual film sheet
Customizable film formats with up to 64 images
Filming parallel to other activities
Independent scanning and documentation
Freely selectable positioning of images onto film sheet
Configurable image text
Printing
Documentation on postscript printer supported
Video Capture and Editing Tool
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 are supported, e.g. AVI, Flash (SWF), GIF, QuickTime (MOV), streaming video.
Image Transfer/Networking
Interface for transfer of medical images and information using the DICOM standard. Facilitates communication with devices from different manufacturers.
DICOM Storage (Send/Receive)
DICOM Query/Retrieve
DICOM Basic print
DICOM Get Worklist (HIS/RIS)
DICOM MPPS
DICOM Storage Commitment
DICOM Viewer on CD

Optional System Software

WorkStream4D
4D workflow with direct generation of axial, sagittal, coronal, or double-oblique images from standard scanning protocols
Elimination of manual reconstruction steps
Reduction of data volume up to a factor of 10, since virtually all diagnostic information is captured in 3D slices
Adaptive 4D Spiral
Facilitates volume perfusion studies in head and body applications for a perfusion range of up to 8 cm
Continuously repeated bi-directional table movement during spiral acquisition enables an extended range for 4D information
Extended FoV (Field of View)
Special image reconstruction algorithms that provide visualization of objects using an FoV up to 78 cm*
HD FoV (Field of View)
Special image reconstruction using an FoV up to 65 cm algorithms that provide visualization of objects with an accuracy sufficient for RTP and bariatric scanning*
***syngo* Security Package**
Provides functionality for user management and flexible access control for patient data
Siemens Virus Protection
Offers top-level defense in safeguarding CT systems against viruses
***syngo* Expert-I**
Enables the physician to interact with the *syngo* CT Workplace from virtually anywhere in your hospital
***syngo* HeartView CT**
syngo HeartView CT with ECG-synchronized true isotropic volume acquisition using prospective ECG-triggered or retrospective ECG-gating mode
Basis for 3D cardiac scanning and reconstruction, e.g. CT-Angiography of the coronary and thoracic vessels or Calcium Scoring
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.
Temporal resolution of down to 83 ms temporal resolution
Adaptive ECG-synchronized dose modulation (pulsing) allowing additional dose savings
Adaptive ECG-synchronized Cardio Sequence scan allowing additional dose savings
Quality control tools enable retrospective ECG viewing and interaction as well as computer-assisted heart phase definition
Automatic detection of irregular heartbeats with intuitive ECG-editing functionality to assure artifact-free data reconstruction

* 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 and image artifacts may appear, depending on the anatomy scanned

Optional Applications for CT Intervention

Adaptive 3D Intervention Suite
Complete solution for non-fluoroscopic and fluoroscopic minimally invasive 3D volume interventions. Includes Adaptive 3D Intervention, Intervention Pro, i-Fluoro, i-Control (wireless or cable), foot switch.
Adaptive 3D Intervention
Near to real-time coronal, sagittal, and oblique image guidance
Layout Editor 3D: user-configurable screen layouts in 3D
Display of coronal, axial, and sagittal MPRs and VRT
Interventional Toolbar with path planning tools such as Auto Needle Detection
i-NeedleSharp: avoids needle artifacts during a sequential intervention
Intervention Pro
Spiral and sequential non-fluoroscopic interventional procedures
i-Sequence biopsy mode with user-configurable dose and windowing display
i-Spiral mode for complete organ coverage
Switching scan modes on the fly during intervention with one single click
Up to 8 image display for better navigation in the volume
Layout Editor with user-configurable screen layouts
Interventional Toolbar with measurement tools and automatic table positioning via buttons or joystick with auto-stop function
Switch between continuous and incremental table movement with user-configurable increment
i-Precision view: increases or decreases the predefined mAs value
HandCARE for i-Sequence: Real-time dose modulation during the CT-guided intervention avoids direct X-ray irradiation of the radiologist's hand
i-Fluoro
Real-time fluoroscopic image guidance with up to 10 frames/s
Image matrix 512 x 512
Fluoroscopy mode with X-ray up to 100 s (dependent on hardware configuration)
Dose & Time Watch for continuous observation of dose and scan time
Up to 8 image display for better navigation in the volume
Intelligent inheritance and adaptation of interventional scan parameters
Interventional Toolbar with measurement tools and automatic table positioning via buttons or joystick with auto-stop function
Switching scan modes on the fly during intervention with one single click
Switch between continuous and incremental table movement with user-configurable increment or "move table top only" mode
Additional flat screen monitor 19" (48 cm) for parallel image display in the examination room
Foot switch: Radiation release directly at the gantry
HandCARE: Real-time dose modulation during the CT-guided intervention. The tube current is automatically switched off to avoid direct X-ray exposure to the physician's hands. HandCARE yields dose savings of up to 70% for the physician and up to 30% for the patient.
i-Control
In-room intervention module for full remote control of gantry, table, and user interface

FAST Applications

FAST Scan Assistant

Easy and intuitive scan parameter setting

FAST Adjust

Direct scan parameter adjustment at the push of a button

FAST Planning*

Direct, organ-based setting of scan and recon ranges for a faster and more standardized workflow

FAST Cardio Wizard*

On-screen step by step guide to cardiac scanning for higher reliability and reproduceability in cardiac CT

FAST Spine*

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

CARE Applications

CARE Filter

Specially designed X-ray exposure filter installed at the tube collimator. Up to 25% dose reduction with increased image quality.

CARE Bolus CT

Scan mode for contrast bolus triggered data acquisition

Significant improvement of the planning procedure by enabling an optimum spiral scan start after contrast injection

The procedure is based on repetitive low dose monitoring scans at one slice level and analysis of the time density curve in an ROI (Region of Interest)

CARE Topo

Real-time topogram

Manual interruption possible once desired anatomy has been imaged

CARE Dose4D

Automated real-time tube current adjustment for best diagnostic image quality at lowest possible dose, independent of patient size and anatomy

Fully automated dose management for adults and children with up to 68% dose reduction

Manual interruption possible once desired anatomy has been imaged

CARE kV

First automated, organ-sensitive voltage setting to optimize contrast-to-noise-ratio and reduce dose by up to 60%

* Optional

CARE Applications

CARE Child – Pediatric Protocols
Dedicated pediatric CT imaging, including 70 kV scan modes and specific CARE Dose4D curves and protocols
Special clinical protocols with 70 or 80 kV selection and a wide range of mAs settings. The X-ray exposure is adapted to the child's (and small adult's) weight and age, substantially reducing the effective patient dose.
CARE Profile
Visualization of the dose distribution along the topogram prior to the scan
CARE Dashboard
Visualization of activated dose reduction features and technologies for each scan range of an examination
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
Adaptive ECG-Pulsing* and Adaptive Cardio Sequence*
Dose-modulated cardiac spiral for dose reduction during the selectable heart phase (part of *syngo* HeartView CT*). Up to 50% dose savings for the patient. Adaptive ECG-synchronized Cardio Sequence scan allows for additional dose saving.
MinDose*
Allows to lower the tube current down to 4% in the phases not intended for reconstruction use, resulting in additional dose savings of 20–30%
Iterative Reconstruction in Image Space (IRIS)**
Significant dose reduction or image quality improvement*****
Sinogram Affirmed Iterative Reconstruction (SAFIRE)***
Siemens' next generation iterative reconstruction with superior raw-data based image quality improvement or significant dose reduction*****
CARE Contrast*
Synchronized scanning and contrast injection through integration of CT scanner and injector facilitates enhanced CT examinations and improved workflow
4D Noise Reduction****
4D Noise Reduction significantly improves image quality or reduces radiation dose by up to 50% for perfusion examinations
Synchronized scanning and contrast injection to optimize workflow and contrast media application

* Optional
** Optional. For U.S. only
*** Optional. The option requires 510(k) review and is not commercially available in the U.S.
**** Optional as part of Volume Perfusion CT
***** In clinical practice, the use of IRIS/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.

syngo CT.3D

syngo CT.3D* (on *syngo* CT Workplace)
syngo CT Workplace
19" (48 cm) flat screen monitor
Enhanced graphics accelerator
syngo Expert-i
syngo 3D Basic
syngo VRT
syngo Fly Through
syngo InSpace4D
syngo Volume Calculation
syngo Dynamic Evaluation
WorkStream4D (3D-Recon and Recon card CT Workplace)

syngo CT.3D* (on *syngo* MultiModality Workplace)
syngo MultiModality Workplace
19" (48 cm) flat screen monitor
Enhanced graphics accelerator
syngo Expert-i
syngo 3D Basic
syngo VRT
syngo Fly Through
syngo InSpace4D
syngo Volume Calculation
syngo Dynamic Evaluation

CT Engines**

CT Acute Care Engine*
Table side rails
Extended FoV
syngo HeartView CT (incl. Adaptive ECG-Pulsing and Adaptive Cardio Sequence)
syngo Cardio BestPhase Plus
syngo Circulation
syngo Circulation Plaque Analysis
syngo Circulation PE Detection***
syngo Circulation PE Detection Basic****
syngo InSpace4D Advanced Vessel Analysis
syngo Calcium Scoring*****
syngo Volume Perfusion CT Neuro*****
syngo Neuro PBV CT
syngo Neuro DSA CT • Autopreprocessing CT DSA

CT Cardiac Engine*
syngo HeartView CT (incl. Adaptive ECG-Pulsing and Adaptive Cardio Sequence)
syngo Cardio BestPhase Plus
syngo Circulation
syngo Circulation Plaque Analysis
syngo InSpace4D Advanced Vessel Analysis
syngo Calcium Scoring*****

CT Neuro Engine*
syngo Volume Perfusion CT Neuro*****
syngo Neuro PBV CT
syngo Neuro DSA CT • Autopreprocessing CT DSA

CT Oncology Engine*
syngo CT Oncology
syngo Colonography incl. Virtual Dissection
syngo Colonography CT with PEV
syngo Prefetching

For more information on applications please refer to the Clinical Engine and Clinical Applications Brochure.

* Optional feature
** *syngo* software feature of CT Clinical Engines available within *syngo* MultiModality Workplace
*** Not available in the U.S.
**** For U.S. only
***** *syngo* software feature of CT Clinical Engines available within *syngo* Acquisition Workplace and *syngo* MultiModality Workplace

syngo.via

syngo.via**

syngo.via is the new imaging software, creating an exciting experience in efficiency and ease of use – anywhere***

syngo.via is intended to be used for viewing, manipulating, communicating, and storing medical images. It can be used as a stand-alone device or together with a variety of cleared**** and unmodified *syngo*.via based software options.

License Model

The number of installed clients can be unlimited. Thereby 10 concurrent clients can be opened, 5 with advanced and 5 with standard applications.

syngo.via Server

The HW configuration depends on the server that has been chosen

Workstation-based Server
Server HW Config. M
Server HW Config. L
Server HW Config. XL

Please see the *syngo*.via datasheet for more details

syngo.via Clients*

Minimum requirements:

- Processor: Pentium IV, 2.4 GHz or higher
- RAM: 1 GB
- Hard drive (free space): 500 MB
- Graphic card: OpenGL 1.1 (min. 1024 x 768)
- Server connection: 100 Mbit/s
- Network connection: 100 Mbit/s
- Client remote connection: 6 Mbit/s

syngo.via Applications

syngo.via supports the following:

- CT, MR, and PET images
- Computed radiography images
- Digital X-ray, X-ray angiographic, and X-ray radio-fluoroscopic images
- Ultrasound images
- Secondary capture images
- Encapsulated PDFs

Connectivity and Data Exchange

syngo.CT Vascular Analysis

syngo.CT Vascular Analysis – Autotracer

syngo.CT CaScoring

syngo.CT Coronary Analysis

syngo.CT Cardiac Function

syngo.CT Cardiac Function – Enhancement*

syngo.CT Cardiac Function – Right Ventricle*

syngo.CT Neuro DSA

syngo.CT Segmentation

syngo.PET&CT Cross-Timepoint Evaluation

syngo.CT Colonography

syngo.CT Colonography – PEV

syngo.Lung CAD

syngo.CT Colonography Advanced

To complement the *syngo*.via configuration of applications, clinically-tailored Engines are available. Also *syngo* MMWP applications can be part of these and since they can run on the *syngo*.via server through Expert-i they can be accessed as well.

For more information on applications please refer to the Clinical Engine and Clinical Applications Brochure.

* Optional

** *syngo*.via can be used as a standalone device or together with a variety of *syngo*.via based software options, which are medical devices in their own rights

*** Prerequisites include: Internet connection to clinical network, DICOM compliance, meeting of minimum hardware requirements, and adherence to local data security regulations

**** The software options are medical devices on their own rights, partially not available for US

CT Acute Care Engine/Engine Pro (for *syngo*.via)

Applications	CT Acute Care Engine	CT Acute Care Engine Pro
***syngo*.CT Vascular Analysis:** Curved & cross-sectional ranges, VesselSURF and Best Plane, measurement and reporting tools for stent planning in case of AAA, one-click Calcium/Plaque Removal (Single Energy)*, stenosis measurement and Profile Curve	●	
***syngo*.CT Coronary Analysis:** Curved & cross-sectional ranges, Angio View, VesselSURF, automatic coronary tracking and labeling (RCA, LM, CX), single click stenosis measurement, image sharpening for stent and calcified lesion evaluation and Profile Curve	●	
***syngo*.CT CaScoring:** Total & relative Calcium Scoring with Coronary Age calculation based on trial data	●	
***syngo*.CT Cardiac Function:** Automatic Left Ventricular Analysis (LVA) for evaluation of ventricular function	●	
***syngo*.CT Neuro DSA:** Automated 3D assessments of infarcted tissue and tissue at risk, Automatic Table and Bone Removal, Best Plane, fast toggling, lesion picking, recalculation mode, follow-up workflow	●	
***syngo* Volume Perfusion CT Neuro:** Automatic registration, motion correction, slab-based perfusion, automatic segmentation, 4D noise reduction, MTT, TTP, CBF, CBV	△	
***syngo* Calcium Scoring:** Total & relative Calcium Scoring	△	
Cardio BestPhase: Automatic best systolic & diastolic phase selection	△	
***syngo* Neuro Perfusion Weighted Map:** Automatic Registration, static 3D PWM map	□	
HeartView: Scanning technique and program for ECG controlled data acquisition and image reconstruction	Ω	
Extended FoV: For scanning, for example, obese patients	Ω	
***syngo* Volume Perfusion CT Neuro:** Automatic registration, motion correction, slab-based perfusion, automatic segmentation, 4D noise reduction, MTT, TTP, CBF, CBV		□
***syngo*.CT Vascular Analysis – Autotracer:** Automatic tracking and labeling of main vessels (zero-click)		●
***syngo*.CT Cardiac Function – Enhancement*:** First pass myocardial enhancement based on Single Energy CT data		●
***syngo*.CT Cardiac Function – Right Ventricle*:** Automatic Right Ventricular Analysis (RVA) for evaluation of ventricular function		●
Adaptive 4D Spiral: Enables whole organ perfusion scanning		Ω
Inclinable Headholder: For optimal positioning of stroke patients		Ω
z-UHR: Ultra high isotropic resolution for imaging of the inner ear, for instance		Ω

● Available as 1, 2, 3 or 5 user licenses on *syngo*.via
□ Available as one user license on *syngo* MMWP Client (MultiModality Workplace)
△ Available as one user license on AWP (Acquisition Workplace)

Ω Scanner Feature

*The information about this product is being provided for planning purposes.
The product requires 510(k) review and is not commercially available in the U.S.

CT Cardio-Vascular Engine/Engine Pro (for *syngo*.via)

Applications	CT Cardio-Vascular Engine	CT Cardio-Vascular Engine Pro
***syngo*.CT Vascular Analysis:** Curved & cross-sectional ranges, VesselSURF and Best Plane, measurement and reporting tools for stent planning in case of AAA, one-click Calcium/Plaque Removal* (Single Energy), stenosis measurement and Profile Curve	●	
***syngo*.CT Coronary Analysis:** Curved & cross-sectional ranges, Angio View, VesselSURF, automatic coronary tracking and labeling (RCA, LM, CX), single click stenosis measurement, image sharpening for stent and calcified lesion evaluation and Profile Curve	●	
***syngo*.CT Cardiac Function:** Automatic Left Ventricular Analysis (LVA) for evaluation of ventricular function	●	
***syngo*.CT CaScoring:** Total & relative Calcium Scoring with Coronary Age calculation based on trial data	●	
Cardio BestPhase: Automatic best systolic & diastolic phase selection	△	
***syngo* Calcium Scoring:** Total & relative Calcium Scoring	△	
HeartView: Scanning technique and program for ECG controlled data acquisition and image reconstruction (RCA, LM, CX)	Ω	
***syngo*.CT Vascular Analysis – Autotracer:** Automatic tracking and labeling of main vessels (zero-click)		●
***syngo*.CT Cardiac Function – Enhancement:** First pass myocardial enhancement based on Single Energy CT data		●
***syngo*.CT Cardiac Function – Right Ventricle:** Automatic Right Ventricular Analysis (RVA) for evaluation of ventricular function		●
***syngo* Volume Perfusion CT Body – Myocardium*:** Dynamic assessment of volumetric myocardial perfusion yielding quantitative values for myocardial blood flow and blood volume (this optional feature is not part of the CT Cardio-Vascular Engine)	optional □	optional □

● Available as 1, 2, 3 or 5 user licenses on *syngo*.via
□ Available as one user license on *syngo* MMWP Client (MultiModality Workplace)
△ Available as one user license on AWP (Acquisition Workplace)
Ω Scanner Feature

CT Neuro Engine/Engine Pro (for *syngo*.via)

Applications	CT Neuro Engine	CT Neuro Engine Pro
***syngo*.CT Neuro DSA:** Direct Image Transfer, Automated Table Removal, Automated Bone Removal, Preferred layout automatically applied, Neuro Best Plane, Fast Toggling, One Click Aneurysm Evaluation, Recalculation Mode, Follow-up Workflow, Reporting	◉	
***syngo* Volume Perfusion CT Neuro:** Auto-Stroke Functionality for automated display of all perfusion parameters MTT, TTP, CBF, CBV and permeability, Automated motion correction, Automated 3D assessments of infarcted tissue and tissue at risk, perfusion plus tumor evaluation model included	△	
***syngo* Neuro Perfusion Weighted Map:** *syngo* Neuro Perfusion Weighted Map (PWM) for static 3D visualization of cerebral blood volume in ischemic areas	□	
***syngo* Volume Perfusion CT Neuro:** Auto-Stroke Functionality for automated display of all perfusion parameters MTT, TTP, CBF, CBV and permeability, Automated motion correction, Automated 3D assessments of infarcted tissue and tissue at risk, perfusion plus tumor evaluation model included		□
Adaptive 4D Spiral: Extends the dynamic range beyond detector width, enables whole organ perfusion		Ω
Inclinable Headholder: For optimal positioning of stroke patients or to protect the patient's eyes		Ω

◉ Available as 1, 2, 3 or 5 user licenses on *syngo*.via
□ Available as one user license on *syngo* MMWP Client (MultiModality Workplace)
△ Available as one user license on AWP (Acquisition Workplace)
Ω Scanner Feature

CT Oncology Engine/Engine Pro (for *syngo*.via)

Applications	CT Oncology Engine	CT Oncology Engine Pro
***syngo*.CT Segmentation:** Segmentation Liver lesions, Segmentation Lung nodules, Segmentation Lymph nodes, General segmentation, Volume rendering of segmentation, Segmentation editing (correction)	●	
***syngo*.PET&CT Cross-Timepoint Evaluation:** Quantify tumor growth rates between time points	●	
***syngo*.CT Colonography:** Multi Monitor Layouts, 2D Reading, 3D Reading (Fly through), Global view (solid/semi transparent), Registered navigation (prone/supine), Hide small intestine, Distance to rectum, Panoramic view, Perpendicular Flight	●	
***syngo*.CT Colonography – PEV:** Autoprocessing, Polyp Enhanced Viewing (PEV)		●
***syngo*.Lung CAD:** Autoprocessing, Lung Computer Aided Detection (CAD)		●
***syngo*.CT Colonography Advanced:** Polyp Lens		●
***syngo* Colon Virtual Dissection:** Virtual Dissection (displays an unfolded view of the entire colon)		optional □
***syngo*.PET Segmentation*:** PET segmentation and evaluation functionality	optional ●	optional ●
***syngo* Volume Perfusion CT Body**:** Quantitative 3D evaluation of dynamic CT data: blood flow, blood volume and permeability, Assessment of perfusion changes during therapy. Whole organ perfusion requires Adaptive 4D Spiral (optional feature – not part of CT Oncology Engine).	optional □	optional □

● Available as 1, 2, 3 or 5 user licenses on *syngo*.via
□ Available as one user license on *syngo* MMWP Client (MultiModality Workplace)

*Optional to CT Oncology Engine / Engine Pro
**Optional as one user license on *syngo* MMWP Client

Installation

Dimensions	Height (mm/inch)	Width (mm/inch)	Length (mm/inch)	Weight (kg/lbs)
Components				
Gantry	≤ 1,980/78.0	≤ 935/36.8	≤ 2,380/93.7	≤ 2,300/5,070
Patient table	≤ 1,000/39.4	≤ 750/29.5	≤ 2,445/96.3	≤ 500/1,102
Multi purpose table*	≤ 1000/39.4	≤ 690/27.2	≤ 2445/96.3	≤ 600/1,323
Operator's console	≤ 720/28.3	≤ 800/31.5	≤ 1,200/47.2	≤ 65/143
Power cabinet	≤ 1,960/77.2	≤ 900/35.4	≤ 700/27.6	≤ 600/1,322
Water/air cooling system**				
Indoor unit	≤ 1,960/77.2	≤ 700/27.6	≤ 700/27.6	≤ 360/794
Outdoor unit	≤ 1,050/41.3	≤ 1,150/45.3	≤ 2,500/98.4	≤ 185/408
Image Recon. System	≤ 550/21.7	≤ 350/13.8	≤ 755/29.7	≤ 100/220
***syngo* Workplaces**				
syngo Acquisition Workplace	≤ 500/19.7	≤ 250/9.8	≤ 650/25.6	≤ 30/66
syngo CT Workplace*	≤ 500/19.7	≤ 250/9.8	≤ 650/25.6	≤ 30/66
syngo MultiModality Workplace*	≤ 500/19.7	≤ 250/9.8	≤ 650/25.6	≤ 30/66
syngo*.via				
syngo.via*	≤ 508/20.0	≤ 282/11.1	≤ 732/28.8	≤ 70/154

* Optional
** Optional split cooling available

Installation

Power Supply	
Nominal voltage 3/N~	380–480 V in 20 V steps
Nominal line frequency	50; 60 Hz
Line impedance at 80 kW	90–140 mOhm dependent on line voltage
Line fuse protection	3 x 125 A (NH)
Power Consumption	
Computer on	2.5 kVA
System on standby	4.0 kVA
Scanning operation	125 kVA (at 80 kW)
Protection Against Input Power Fluctuation/Interruptions	
Gantry with X-ray	≤ 5 ms
Gantry without X-ray	≤ 10 ms
Image Reconstruction	≤ 300 s
System, *syngo* Acquisition Workplace, *syngo* CT Workplace	optional with UPS
Fluctuation	
Nominal voltage	+10/-16%
Nominal frequency	2 Hz
Electromagnetic Compatibility	
This product is in compliance with IEC 60601-1-2 and fulfils CISPR 11 Class A	
Cooling	
Heat dissipation to cooling environment (air-cooled) including gantry, table, power supply and computer periphery	min. 6.5 kW max. 12 kW
Heat dissipation to water cooling environment (water-cooled) including gantry, table, power supply and computer periphery	min. 6.5 kW max. 12 kW
Heat dissipation computing periphery only	max. 2.5 kW
Room Environment	
Temperature range	18–28 °C
Temperature gradient	max. 6 K/h
Relative air humidity without condensation	20–75%
Surface Area for Installation	
System	18 m²

Image Quality

Low-contrast Resolution

Low-contrast resolution is the ability to see
- a small object (mm)
- with a certain contrast difference (HU)
- on a particular phantom (Ø)
- at a certain mAs value (mAs)
- with a particular patient dose (mGy)

Spiral	
Phantom	CATPHAN (20 cm)
Object size	5 mm
Contrast difference	3 HU
CTDIvol (Ø 32 cm)	13.1 mGy at 180 eff. mAs
Technique	10 mm, 120 kV

Sequence	
Phantom	CATPHAN (20 cm)
Object size	5 mm
Contrast difference	3 HU
CTDIvol (Ø 32 cm)	10.7 mGy at 180 eff. mAS
Technique	10 mm, 120 kV

High-contrast Resolution

x-y-plane*	0% MTF (±10%) 30 lp/cm 2% MTF (±10%) 24 lp/cm 10% MTF: 13.4 lp/cm (±10%) 50% MTF: 11.5 lp/cm (±10%)
Technique	160 mA, 120 kV, 1 s, 0.4 mm

Homogeneity

Cross-field uniformity	max. ± 4 HU
in a 20 cm water phantom	typ. ± 2 HU

Dose, $CTDI_{100}$ Values

Phantom		kV	kV	kV	kV	kV
Ø		70	80	100	120	140
16 cm	A	2.9	4.6	9.3	15.2	22.3
	B	3.1	4.9	9.6	15.7	22.9
32 cm	A	0.7	1.2	2.7	4.7	7.2
	B	1.5	2.5	5.1	8.6	12.8

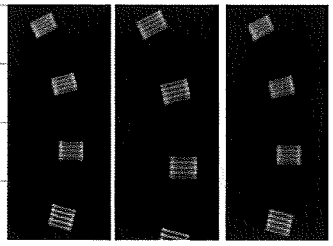
A: at center B: 1 cm below surface

Technique	Collimation 16 x 1.2 mm 100 mAs 360° rotation PMMA-Phantom Absorbed dose for reference material air Max. deviation ± 40% for 70 kV Typically less than 15% Values according to IEC 60601-2-44

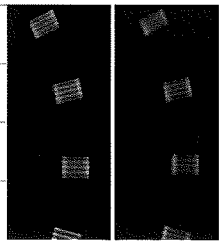
Phantom Validation of z-Sharp Technology

CATPHAN measurement demonstrates clearly industry's highest routine isotropic resolution of 0.33 mm
- 0.33 mm x 0.33 mm x 0.33 mm
- in daily clinical routine
- at any scan speed (any pitch)
- at all positions of the scan field

Pitch	0.55	1.0	1.5
z-axis			
0.33 mm			
0.36 mm			
0.38 mm			
0.42 mm			



Pitch	1.0 Center	1.0 100 mm Off-center
z-axis		
0.33 mm		
0.36 mm		
0.38 mm		
0.42 mm		



Phantom Validation of z-UHR**

CATPHAN measurement results in industry's highest isotropic resolution of 0.24 mm in all three planes (x, y, and z)
- 0.24 mm x 0.24 mm x 0.24 mm
- for ultra-high resolution bone-imaging
- isotropic detail in the range of flat panel or Micro CT technology
- 0.3 mm collimation

* Optional. Standard high-contrast resolution 17.4 lp/cm at 0% MTF and 16.4 lp/cm at 2% MTF
** Optional

Selected Scientific Publications

Adaptive 4D Spiral:

Goetti R, Leschka S, Desbiolles L, Klotz E, Samaras P, von Boehmer L, Stenner F, Reiner C, Stolzmann P, Scheffel H, Knuth A, Marincek B, Alkadhi H.
Quantitative computed tomography liver perfusion imaging using dynamic spiral scanning with variable pitch: feasibility and initial results in patients with cancer metastases.
Invest Radiol. 2010 Jul;45(7):419-26.

Morhard D, Wirth CD, Fesl G, Schmidt C, Reiser MF, Becker CR, Ertl-Wagner B.
Advantages of extended brain perfusion computed tomography: 9.6 cm coverage with time resolved computed tomography-angiography in comparison to standard stroke-computed tomography.
Invest Radiol. 2010 Jul;45(7):363-9.

Helck A, Sommer WH, Klotz E, Wessely M, Sourbron SP, Nikolaou K, Clevert DA, Notohamiprodjo M, Illner WD, Reiser M, Becker HC.
Determination of glomerular filtration rate using dynamic CT-angiography: simultaneous acquisition of morphological and functional information.
Invest Radiol. 2010 Jul;45(7):387-92.

Adaptive Dose Shield:

Deak PD, Langner O, Lell M, Kalender WA.
Effects of adaptive section collimation on patient radiation dose in multisection spiral CT.
Radiology. 2009 Jul;252(1):140-7.

Christner JA, Zavaletta VA, Eusemann CD, Walz-Flannigan AI, McCollough CH.
Dose reduction in helical CT: dynamically adjustable z-axis X-ray beam collimation.
AJR Am J Roentgenol. 2010 Jan;194(1):W49-55.

Adaptive Cardio Sequence:

Arnoldi E, Johnson TR, Rist C, Wintersperger BJ, Sommer WH, Becker A, Becker CR, Reiser MF, Nikolaou K.
Adequate image quality with reduced radiation dose in prospectively triggered coronary CTA compared with retrospective techniques.
Eur Radiol. 2009 Sep;19(9):2147-55. Epub 2009 May 5.

Duarte R, Fernandez G, Castellon D, Costa JC.
Prospective Coronary CT Angiography 128-MDCT Versus Retrospective 64-MDCT: Improved Image Quality and Reduced Radiation Dose.
Heart Lung Circ. 2011 Feb;20(2):119-25. Epub 2010 Oct 13.

CT angiography, other than cCTA:

Hinkmann FM, Voit HL, Anders K, Baum U, Seidensticker P, Bautz WA, Lell MM.
Ultra-fast carotid CT-angiography: low versus standard volume contrast material protocol for a 128-slice CT-system.
Invest Radiol. 2009 May;44(5):257-64.

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Global Business Unit

Siemens AG
Medical Solutions
Computed Tomography
Siemensstr. 1
91301 Forchheim
Germany
Phone: +49 9191 18 0
Fax: +49 9191 18 9998

Global Siemens Headquarters

Siemens AG
Wittelsbacherplatz 2
80333 Muenchen
Germany

Global Siemens Healthcare Headquarters

Siemens AG
Healthcare Sector
Henkestr. 127
91052 Erlangen
Germany
Phone: +49 9131 84-0
www.siemens.com/healthcare

Legal Manufacturer

Siemens AG
Wittelsbacherplatz 2
DE-80333 Muenchen
Germany

www.siemens.com/healthcare

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EXHIBIT 4

Documentation of Current Usage
Siemens SOMATOM Sensation 16 CT Scanner

DATE: 04/03/14 @ 1058 Catawba Valley Med Ctr SCH *LIVE* PAGE 1
USER: RBARE Scheduling Resource Appointment List

Resr Group CVICIMGRMS Resource: DICT DI CT - CVIC
For Date: 04/04/14

CURRENT APPOINTMENT STATUS: BOOKED

0730 V0041[redacted] T 45/F DI CT Upper Extremity M0257585 DALE RADER
[redacted] SCH CLI LEFT WRIST PAIN
PCP Referring: ND3 NO,PCP
RESCH W/ PT 04/03
MAILBOX FULL CANNOT REACH PT - RS
PER MELONIE/OFFICE TO FAX ORDER
LEFT WRIST

0800 V0041[redacted] L 53/M DI CT Chest Abd Pelvi M0199838 RICHARD ORLOWSK
[redacted] SCH CLI LANGERHANS CELL HYSTOCYTOSIS
PCP Referring: Alan G Forshey, MD
SCHEDULE WITH KATHERINE - TO FAX ORDER
CT CHEST/ ABD / PELVIS

0830 V004[redacted] C 54/F DI CT Chest Abd Pelvi M0179193 RICHARD ORLOWSK
[redacted] PRE CLI COLON CA
PCP Referring: ND3 NO,PCP
RESCH W/ PT 04/02
SCHED WITH DONNA - TO FAX ORDER
CREATININE ON 3/14 (0.92)

0900 V0042[redacted] 49/M DI CT Chest Abd Pelvi M0283836 RICHARD ORLOWSK
[redacted] SCH CLI RESTAGING WITH WALDENSTROMS
PCP Referring: ND3 NO,PCP
SCHED W/LESLIE - PT NEEDS CREAT DRAWN PRIOR

0930 V0041[redacted] 5/F DI CT Chest w/contras M0238720 RICHARD ORLOWSK
[redacted] SCH CLI ESOPH CANCER
PCP Referring: **KURTH-BOWEN,CORNELIA
SCH APPT W LESLIE // 03-14

1000 V004[redacted] L 63/F DI CT Chest Abd Pelvi M0294693 RICHARD ORLOWSK
[redacted] PRE CLI LYMPHOMA
PCP Referring: Maureene H Andrews, PA-C
SCHEDULED WITH KATHERINE - OFFICE TO FAX

1030 V0039[redacted] S 55/F DI CT Chest w/contras M0366680 RICHARD ORLOWSK
[redacted] PRE CLI RECTAL CANCER,LUNG NUDULE
PCP Referring: **BYRD,KERRY
RESCH APPT W PT // 03-17
SCH APPT W DONNA - MD OFFICE - 02-18

1100 V0041[redacted] S 60/F DI CT Head w/contrast M0252402 WILLIAM C. CABA
[redacted] SCH CLI HEADACHE
PCP Referring: Elbert A Rudisill, MD
RESCHD W/ PT

1230 V004[redacted] A JOY 71/F DI CT Chest w/wo cont M0278640 DANIEL E ANDERS
[redacted] PRE CLI TOBACCO USE
PCP Referring: Alan G Forshey, MD
ATTN PRE REG....THIS IS A SPECIAL LUNG CANCER SCREENING. PT IS RESPONSIBLE FOR

Resr Group CVICIMGRMS Resource: DICT DI CT - CVIC
For Date: 04/04/14

$135 UP FRONT...PB
PT CONFIRMED 3-28
FAXED ORDER
L/M FOR PT TO CALL

1300 V00[redacted] R 50/F DI CT Chest HI RES or M0227498 LISA A RUDISILL
[redacted] REG CLI NONSPECIFIC (ABNORMAL) FINDINGS ON RADIO
PCP Referring: Lisa A Rudisill, NP
ATHENA ORDER
UNAVAILABLE RT NOW, TRY AGAIN LATER 5/28, 5/29,UNAVAILABLE 5/30, 6/12 // LM FOR PT ON (828) 781-7390 03/25

1330 V004[redacted] A 57/F DI CT Soft Tissue Nec M0495706 BRIAN KAUTH MD
[redacted] SCH CLI PMH of breast cancer, lymphadenopathy
PCP Referring: Brian G Kauth, MD
ATHENA ORDER
NPR - PT CONFIRMED APPT 4/1

1400 V004[redacted] 69/M DI CT Orbits M0614813 JOHN G TYE
[redacted] SCH CLI BITEMPORAL HEMIANOPIA
PCP Referring:
CT ORBITS, SELLA, POST FOSSA WITHOUT CONTRAST

1430 V00[redacted] 53/M DI CT Abdomen/Pelvis M0366238 WILLIAM E LONG
[redacted] SCH CLI CONTINUED MICROSCOPIC HEMATURIA,ABNORMAL
PCP Referring:
ATHENA ORDER
NPR - LM 4/1
PT CONFIRMED

1500 V004[redacted] 36/F DI CT Orbits M0614816 RODERICK HARGRO
[redacted] SCH CLI EDEMA LT EYE
PCP Referring:
SCH W/ NATALIE-OFFICE // TO FAX ORDER

1530 V00[redacted] B 54/F DI CT Chest w/wo cont M0396503 DON L HOOVER MD
[redacted] SCH CLI PHRENIC NERVE PALSY
PCP Referring: **LUTZ,MICHAEL D
PT CONFIRMED 3-28
FAXED ORDER
LM 3/27

1600 V0041[redacted] 45/M DI CT Sinuses M0614347 DAVID CABRAL
[redacted] PRE CLI OTHER CHRONIC SINUSITIS
PCP Referring: **CABRAL,DAVID
3/24 LM TO CB TO PRE - RS
RESCH APPT W PT // 03-21
NPR/L/M FOR PT TO CALL
PT WIFE CONFIRMED

CURRENT APPOINTMENT STATUS: CANCELLED

0830 V004[redacted] 33/F DI CT Abdomen/Pelvis M0433298 RONALD N LOCKE

Resr Group CVICIMGRMS
Resource: DICT DI CT - CVIC
For Date: 04/04/14

[redacted] SCH CLI ABD MASS, HX UMBILICAL HERNIA REPAIR
PCP Referring: Shannon M Sherfey, MD
PER MARILYN @ MD OFFICE TO CANCEL 04/02
ATHENA ORDER
PENDING AUTH
APPROVED-SCHEDULED WITH MARILYN/OFFICE

Total appointments: 17