

## Detailed Technical Specifications

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	<p>The Symbia Intevo 16 camera system consists of the following integrated features:</p> <ul style="list-style-type: none"><li>- Gantry</li><li>- Patient Bed</li><li>- Acquisition Workplace</li><li>- SPECT Acquisition Features</li><li>- CT Acquisition Features</li></ul> <p><b><u>Gantry</u></b></p> <p>The gantry has two Variable Angle SPECT detectors and an open design with a 70 cm (27.6 in.) patient opening. The two low profile digital SPECT detectors can be configured at 76° or 90° for cardiac applications and at 180° or numerous other configurations for all other whole body and general protocols. The unobstructed gantry base permits planar imaging of seated and standing patients and patients on wheelchairs, or on standard imaging tables, gurneys and hospital beds. Optional caudal tilt of one detector allows for optimum detector positioning of static and dynamic acquisitions. The Ultra Fast Ceramic multislice spiral CT detector rotates at 120 RPM (0.5 sec per revolution).</p> <p>The gantry supports circular and non-circular orbits. Autocontour, with infrared real-time body contouring, is a standard component which minimizes patient to collimator distance to 1.2 cm (0.45 in.) in Whole Body and SPECT non-circular orbit acquisition modes.</p> <p>All motorized motions of the system are controlled from hand controller which can be plugged into either side of the gantry.</p> <p>The Patient Positioning Monitor is a touch screen flat panel which can be rotated for a wide range of user access and visibility. It is used for the following functions:</p> <ul style="list-style-type: none"><li>- Patient positioning with window and persistence adjustment</li><li>- Acquisition parameter display (elapsed time, time remaining, view number, count rate, etc.)</li><li>- Camera information (detector and bed positions)</li><li>- Gantry control (reconfiguration, collimator change, offset zoom, and adjusting the CT acquisition limits.)</li></ul> <p>A fully integrated source holder is provided for quick and convenient quality control.</p> <p><b><u>Patient Bed</u></b></p> <p>The patient-oriented design of the imaging bed consists of 35.6 cm (14 in.) wide and 15 mm (0.6 in.) thin, carbon fiber pallet, supporting patient weights up to 227 kg (500 lbs). Minimum bed height is 53 cm (21 in.) for easy patient access. Programmable table positions for wheelchairs and gurneys minimize the transport efforts of patients and staff. Integrated rulers on each side of the patient bed allow for quick whole body set up. The bed also provides automatic, uninterrupted table feed for multi-rotation continuous CT volume scanning. The patient bed can be easily pivoted to the side for rail-free access of sitting/standing patients, wheelchairs, imaging tables, gurneys and hospital beds.</p> <p><b><u>Acquisition Workplace</u></b></p> <p>The syngo-based high performance workstation provides a multi-modality graphical user interface, keyboard and mouse. SPECT and CT acquisition, quality control, and display are integrated in a single workplace.</p>

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	<p>Workflows for a wide variety of clinical protocols are included. The workplace offers customizable displays and full DICOM archiving and printing functionality.</p> <p><b><u>SPECT Acquisition Features</u></b></p> <p><b>SPECT Acquisition Modes</b></p> <ul style="list-style-type: none"> <li>- Planar static and dynamic</li> <li>- Whole Body</li> <li>- SPECT</li> <li>- Gated SPECT</li> <li>- Dynamic SPECT</li> <li>- Whole Body SPECT</li> </ul> <p><b>SPECT Features</b></p> <p><b>Workflow Features:</b> The system combines acquisition, post-processing (optional), and display into user customizable workflows that automate many clinical routines, remembering parameters for each clinical protocol, the workflow will automatically print, archive, and distribute your results to other devices on your network.</p> <p><b>Quality Control:</b> Automatic and manual motion correction features aids in the improvement of the quality of the acquired images. Besides correcting for motion, gated studies can be beat normalized and quality control images such as sinograms and linograms created to document the results.</p> <p><b>3D Orientation:</b> Reorient acquired SPECT volumes interactively to achieve the desired image orientation. Cardiac and general orientations are supported. If desired, the orientation applied to one volume can be automatically applied to up to 3 additional volumes.</p> <p><b>Image Registration:</b> Multiple techniques provide accurate registration of acquired images including translation and rotation in three primary planes, optional automatic registration and landmark registration. The choice of output matrix size is a standard feature.</p> <p><b>Reconstruction:</b> The reconstruction engine supports up to 5 multi-isotope studies concurrently. Standard SPECT as well as wholebody, dynamic and gated cardiac volumes can be created. Advanced techniques that provide high image quality come standard with our system:</p> <ul style="list-style-type: none"> <li>- <u>xSPECT Iterative Reconstruction</u> The xSPECT ordered-subset conjugate-gradient reconstruction algorithm uses xSPECT technology to register the SPECT information into the CT frame of reference laying the foundation for higher SPECT image resolution with xSPECT Bone (purchasable option) and accurate and reproducible quantitative results with xSPECT Quant Tc99m (purchasable option).</li> <li>- <u>Flash Iterative Reconstruction</u> Flash 3D is a 3D iterative image reconstruction solution which offers the best reconstruction resolution in the market today following NEMA requirements. Flash 3D reconstruction uses a measured 3D collimator beam model in the iteration process. Correct modeling of the collimator distributes the activity over the slices for more accurate reconstruction. With Flash, the spatial resolution of the collimator is modeled to maintain the precise shape of the lesion. As a result, images are reconstructed with more counts in the correct volume, increasing image contrast. The key components behind Flash 3D technology are: <ul style="list-style-type: none"> <li>- Ordered Subset Expectation Maximization (OSEM) reconstruction algorithm using 3D collimator modeling to increase resolution and decrease noise,while maintaining the exact shape of organs and lesions,when compared to filtered back projection reconstruction.</li> <li>- CT Attenuation Correction that creates very precise attenuation maps from the high quality CT data to correct for attenuation and increase reading accuracy.</li> </ul> </li> </ul>

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	<ul style="list-style-type: none"> <li>- Scatter Correction that uses patient specific scatter projection estimates to form a generalized dual-or triple energy window method to compensate for scatter during the iterative reconstruction process.</li> </ul> <p><b><u>CT Acquisition Features</u></b></p> <p><b>CT Acquisition Modes</b></p> <ul style="list-style-type: none"> <li>- Topogram, scanning perspectives: anterior-posterior (ap), posterior-anterior (pa), lateral (lat)</li> <li>- Spiral CT, continuous volume scanning technique with uninterrupted table feed in the multi-rotation mode</li> <li>- Sequential CT, incremental, slice-by-slice imaging mode with no table movement during data acquisition</li> </ul> <p><b>CT Features</b></p> <p><b>CARE Dose 4D:</b>  Care Dose 4D automatically determines the minimal x-ray dose level needed to obtain optimal image quality, for all scan modes. The initial or starting tube current for every axial slice position is determined from the topogram image. Then, during the data acquisition for each axial slice, the x-ray attenuation values are closely monitored and the tube current is adjusted, on a real time basis, to optimize the x-ray dose level for the specific organs and anatomy in the x-ray path.  Several clinical benefits are achieved with CARE Dose 4D:</p> <ul style="list-style-type: none"> <li>- Significant x-ray dose reduction (up to 68 %) possible for all body regions scanned compared with standard sequence or spiral scanning</li> <li>- Consistent, optimal image quality with the x-ray dose level unique for every patient and for every anatomical region</li> <li>- Thinner axial slices and/or longer scan ranges possible because of reduced tube loading</li> <li>- Ultra-low dose examinations for pediatric patients</li> </ul> <p><b>SureView™ – Multislice Image Reconstruction System</b></p> <ul style="list-style-type: none"> <li>- Excellent Image Quality and no slice broadening at any pitch – IQ is kept constant for all scan speeds, independent of the selected range and scan time.</li> <li>- Up to 20% dose savings in spiral mode.</li> </ul> <p><b>Workstream4D</b>  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. Fast image reconstruction of up to 16 images/s in 512 matrix is provided.</p> <p><b>Asynchronous Recon:</b>  Asynchronous Recon allows for multiple image reconstructions and reformats, parallel to scanning. With this feature, up to eight reconstruction job requests can be loaded into a scan protocol. Immediately upon completion of the scan acquisition, these reconstruction jobs are automatically executed in the background without delaying the start of next patient examination.</p> <p><b>Image reconstruction:</b>  Reconstruction using raw data zoom with the possibility of freely selecting the image center either before scanning (prospectively) or retrospectively.</p> <p><b>Image display:</b>  CT value scale for window setting -1024 to +3071 HU. For very dense objects the CT value scale can be extended from -10240 to +30710 HU.</p> <p><b>Multiplanar Reconstruction (MPR)</b>  Real-time MPR for real-time reconstruction of secondary slices.  Slice orientation: coronal, sagittal, irregular as well as multi-planar with SIR and Oblique. Cutlines can be</p>

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	<p>determined using the reference tomogram or in sagittal reformatted images (SRI). 512 x 512 reconstruction matrix.</p>
	<p>Symbia utilizes energy independent low profile digital Foresight detectors.</p> <p>Detector assembly technical specifications:</p> <ul style="list-style-type: none"> <li>— True rectangular FOV of 38.7 x 53.3 cm (15.25 x 21 in.)</li> <li>— 59 photomultiplier tubes – 53, 7.6 cm (3 in.) and 6, 5.1 cm (2 in.) diameter tubes</li> <li>— .95 x 59.1 x 44.5 cm (3/8 x 23 x 17.4 in.) NaI (TI) crystal material</li> </ul> <p>The Low Profile Digital Foresight Detector features:</p> <ul style="list-style-type: none"> <li>— Balanced performance between energy resolution and spatial resolution</li> <li>— One, 10-bit high-speed flash ADC per PMT</li> <li>— Variable PMT selection ensures high resolution for all multi-energy and multi-peak applications</li> <li>— Optimized dynamic digital integration time to improve high count rate capability</li> <li>— Individual PMT pile-up correction for improved performance at high count rates</li> <li>— Energy independence maintains clinical performance at all energies including multi-peak and dual isotope studies</li> <li>— Location independence maintains consistent spatial resolution across the field of view</li> <li>— Crystal variation correction for optimal uniformity and linearity across all energies</li> </ul> <p>Single source (Co-57 or Tc-99m) tunes the detector for all energies</p>
	<p>The low energy high resolution collimator has the following technical specifications:</p> <ul style="list-style-type: none"> <li>- 148,000 hexagonal holes</li> <li>- Sensitivity: 202 cpm/microCurie</li> <li>- Resolution: 7.5mm at 10 cm</li> <li>- Weight: 22 kg (49 lbs)</li> </ul>
	<p>The medium energy collimator has the following technical specifications:</p> <ul style="list-style-type: none"> <li>- 14,000 hexagonal holes</li> <li>- Sensitivity: 275 cpm/microCurie</li> <li>- Resolution: 12.5 mm at 10 cm</li> <li>- Weight: 64 kg (140 lbs)</li> </ul>
	<p>The high energy collimator has the following technical specifications:</p> <ul style="list-style-type: none"> <li>- 8,000 hexagonal holes</li> <li>- Sensitivity: 135 cpm/microCurie</li> <li>- Resolution: 13.4 mm at 10 cm</li> <li>- Weight: 125 kg (275 lbs)</li> </ul> <p>Due to the weight of these collimators, it is recommended that an individual collimator cart containing only the 2 high energy collimators be utilized.</p>
	<p>The productivity package includes the following features:</p> <ul style="list-style-type: none"> <li>- Integrated Collimator Changer</li> <li>- Automatic Collimator Exchange</li> <li>- Automatic Quality Control</li> </ul> <p><b>Integrated Collimator Changer</b></p>

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	<p>Innovative collimator exchange system that is mounted beneath the patient bed. Saves time and effort when changing collimators. Holds two sets of low or medium energy collimators including SMARTZOOM collimators.</p> <p><b>Automatic Collimator Changer</b></p> <p>Fully automated changing of collimators within the integrated collimator changer. Collimator removal or exchange is initiated from the patient positioning monitor.</p> <p><b>Automatic Quality Control</b></p> <p>Automatic quality control is performed via self-shielding Gd-153 line and Co-57 point sources. The sources are housed in the patient bed and are extended automatically as part of the camera's quality control procedures. The daily, weekly, and monthly procedures are customer scheduled and performed automatically without manual intervention.</p>
	<p>The useful life of the 370 MBq (10 mCi) Gd-153 line, used for daily extrinsic floods and monthly multi-head registration procedures, is 2 years. The useful life of the 1.85 MBq (50 µCi) Co-57 point, used for intrinsic floods, is 1 year.</p> <p>Sources that have been replaced are returned to the source vendor for disposal. Return shipment costs are not included in the purchase price.</p>
	<p>The collimator cart is automatically clamped to the patient bed once positioned by the user. The clamping mechanism allows precise collimator exchange to occur.</p> <p>The collimator cart is designed to hold 2 sets of collimators, or 1 set in combination with a pinhole collimator.</p> <p>Due to the weight of the high energy collimators, it is recommended that an individual collimator cart containing only the 2 high energy collimators be utilized.</p>
	<p>The extended pivot increases the range from 33 degrees to 45 degrees to allow better handling of wide hospital beds.</p>
	<p>The Symbia Intevo and T series scanners come standard with a single hand controller that can be plugged into either side of the gantry. This option adds an additional hand controller for added efficiency in accessing the motorized motions for the patient bed, gantry, and detectors.</p>
	<p>The dual monitor software option enables the Hybrid Acquisition Console to utilize 2 LCD or DICOM monitors thereby expanding your clinical flexibility and efficiency when running multiple workflows. This option allows you to optimally compare an old and a new study on the same patient, or to simply process more than one patient at the same time.</p>
	<p>Additional features include:</p> <ul style="list-style-type: none"> <li>- 19" TFT panel</li> <li>- minimum of 170 degree horizontal and vertical viewing angle</li> <li>- Optimal picture resolution of 1280 x 1024</li> <li>- Contrast ratio 450:1</li> <li>- Maximum luminance 280 cd/m2</li> <li>- Anti-glare panel surface</li> </ul>
	<p>Organ processing provides generic tools for the manipulation of NM images. In addition, it provides dedicated processing protocols for the many different types of exams performed in nuclear medicine departments. Features provided are:</p>

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	<ul style="list-style-type: none"> <li>- Cardiac: Planar Gated Blood Pool, First Pass, Shunt</li> <li>- Lung: Perfusion, Ventilation, V/Q</li> <li>- Thyroid</li> <li>- Renal: GFR, ERPF, MAG3, Transplant, TER, Ace Inhibitor</li> <li>- Gastric</li> <li>- Hepatobiliary</li> <li>- Brain: Patlok, Lassen, IMP, IMP-ARG, NIMS</li> <li>- GSA Liver</li> <li>- Parathyroid: Scaled subtraction</li> <li>- Image manipulation tools: Series Filter, Series Arithmetic, Series Reformat, and Series ROI and Curve</li> <li>- Manual Fusion</li> </ul> <p>The Planar ½ Time Imaging package is based upon a statistical, adaptive de-noising and de-blurring process for planar imaging. It can be used to:</p> <ul style="list-style-type: none"> <li>— Shorten the acquisition time of planar imaging, and/or</li> <li>— Reduce the dose administered to the patient, and/or</li> <li>— Enhance the image quality of statistically poor imaging results</li> </ul> <p>The Cardiology Engine provides the Cedars Cardiac SPECT Suite, a comprehensive set of quantitation programs for the evaluation of SPECT Myocardial Perfusion Imaging</p> <p>The engine calculates a comprehensive set of cardiac parameters including ejection fractions, volumes, wall motion including right ventricular free wall motion in QBS, wall thickening, perfusion (%). QPS allows for the quantitation of prone SPECT data and of serial perfusion changes. Both 20 and AHA-17 segment scoring models are available. In addition to calculating an Eccentricity Index, QGS also calculates a more regional measure of LV shape known as the Shape Index. Displays include gated slices with contours, a motion frozen display which results in better resolution and contrast by eliminating motion of the cardiac cycle, interactive 3D images, and polar maps. Manual over-ride of contours and DICOM compatible output are additional features. Outputs include DICOM secondary capture files, result files as well as the ability to generate an AVI file format. The Cedars application is an OEM product developed and supported by Cedars Sinai.</p> <p>Applications include: Cedars SPECT Suite</p> <p>A broadband connection is required for full remote service functionality and optimal system uptime. The Siemens Remote Service option allows for remote access to your networked workstations. Hardware may need to be purchased.</p> <p>Features include:</p> <ul style="list-style-type: none"> <li>- Image Transfer</li> <li>- Remote updates including Virus Protection</li> <li>- Error log retrieval</li> <li>- Remote Workflow revisions</li> <li>- Remote configuration</li> <li>- License management</li> <li>- Remote workstation control via netmeeting</li> </ul> <p>The kit anchors the gantry and bed to the floor with the included bed tie down assembly and seismic anchor bolts for the gantry.</p> <p>Installation includes:</p> <ul style="list-style-type: none"> <li>- Complete system assembly</li> <li>- Alignment</li> </ul>

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	<ul style="list-style-type: none"> <li>- System startup</li> <li>- Calibrations</li> <li>- Performance verification to factory specifications</li> </ul> <p>This option is required for all US Installations</p>
	<p>This educational offering must be completed by the later of (12) months from purchase of training or if applicable, completion of installation. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.</p>
	<p>The pinhole collimator with 4 mm aperture has the following technical specifications:</p> <ul style="list-style-type: none"> <li>- 1 round hole</li> <li>- Sensitivity: 123 cpm/microCurie for 99m Tc</li> <li>- Resolution: 6.6 mm at 10 cm</li> <li>- Weight: 80 kg (177 lbs)</li> </ul> <p>SPECT imaging with a pinhole collimator is not allowed.</p> <p>The pinhole collimator occupies the upper 2 locations on a collimator cart; Therefore, only an additional 2 collimators (1 pair) can be stored on the same cart.</p>
	<p>Hospital promotional videos, patient procedure information, relaxation videos, and music CDs are just a few examples of the material that can be experienced with e.media.</p> <p>Outside of Region 1 (United States, U.S. Territories, and Canada), the DVD player, which must be purchased locally and must meet the following minimum specifications:</p> <ul style="list-style-type: none"> <li>- Media: DVDs and Audio CDs</li> <li>- Video Format: NTSC, PAL or SECAM</li> <li>- Audio: DVD per DVD PCM Standard</li> <li>- CD per Redbook Standard</li> <li>- Outputs: Audio L/R, Phono Jack</li> <li>- Power: 100-240 VAC 50/60 HZ</li> <li>- Power consumption: &lt; 8 w max</li> </ul>
	<p>The collimator cart is automatically clamped to the patient bed once positioned by the user. The clamping mechanism allows precise collimator exchange to occur.</p> <p>The collimator cart is designed to hold 2 sets of collimators, or 1 set in combination with a pinhole collimator.</p> <p>Due to the weight of the high energy collimators, it is recommended that an individual collimator cart containing only the 2 high energy collimators be utilized.</p>