UNITED IMAGING

Shanghai United Imaging Healthcare Co., Ltd.

uCT 960+

Computed Tomography X-ray System

uCT 960+

The uCT 960+ is United Imaging's ultra-premium computed tomography scanner, enabling you to reach a new height in CT imaging. With industry-leading specifications and AI empowered technologies, the uCT 960+ provides new CT capabilities with impressive image quality, low dose and intelligent applications.

- 160 mm z-coverage in a single axial exposure with a 320-row 0.5 mm-slice Z-Detector
- 0.25 s industry leading rotation speed for high native temporal resolution, and maximum 440 mm/s fast volumetric scanning capability
- 25 ms effective whole-heart temporal resolution boosted by the innovative AI-empowered CardioCapture technology
- 82 cm bore size, 318 kg (700 lbs) maximum table load capacity allows flexible positioning and access for all patients
- The uAI Vision scan navigation system enables single-click precise patient positioning for both isocenter and horizontal range
- The cutting edge Deep IR reconstruction method innovatively brings the power of model-based iterative reconstruction and deep learning technology together. Deep IR has achieved a breakthrough in image quality with outstanding low contrast detectability, high spatial resolution, reduced artifact and low dose all at the same time

The uCT 960+ provides robust clinical solutions for you and your patients, even during the most challenging clinical scenario period, and enables successful examination for all patients.

Cardiovascular

Designed to make coronary CTA imaging more robust than ever, the uCT 960+ is engineered with unprecedented temporal resolution and an AI-empowered workflow. The one-beat coronary CTA solution allows users to confidently perform coronary CTA scans without having to repeat scans, therefore lowering the patient radiation and contrast dose.

- **160 mm whole heart coverage with 0.25 s rotation speed** to achieve robust, low dose and high quality cardiac imaging within one heart beat
- **CardioAssist** automatically recommends gating parameters within one heart beat for every patient according to the patient's heart rate during the scanning simulation.
- **CardioXphase** automatically analyzes and evaluates the motion of the coronary artery, and directly reconstructs cardiac images with the optimal phase.
- **CardioCapture** is designed to effectively reduce the coronary motion artifact with AI-based coronary artery extraction for precise movement tracking. Together with the 160 mm detector coverage and industry leading rotation speed, the innovative CardioCapture technology further boosts the effective whole-heart temporal resolution to 25 ms[1], providing confident diagnostic images for patients with especially high heart rates and arrhythmias.
- **CardioAdapt** can monitor and avoid scanning during an irregular beat and rescan during the next regular beat within the same contrast injection, to improve the robustness of cardiac scanning for challenging patients with unstable heart beats or arrhythmia.

The uCT 960+ provides an intelligent and streamlined workflow on the console, which delivers the best coronary artery images right after the examination ends.

CardioAssist

Assess the patient's heart rate during the scanning simulation and provide automated gating setting

Cardiac Imaging

One beat scan mode

Real-time irregular beat detection and rescan

CardioXphase

Automatic best phase reconstruction based on the assessment of coronary artery motion

CardioCapture

Intelligent motion correction with AI-empowered coronary artery extraction for precise movement tracking

[1]The effective temporal resolution is demonstrated by mathematical simulation.

Based on one-beat cardiac imaging and fast helical scanning capability, the uCT 960+ allows for robust and high quality studies for complex clinical scenarios which require comprehensive and multi-aspect assessment for decision making.

One-beat cardiac assessment for both cardiac morphological and functional analysis

The uCT 960+ allows for acquiring motion-free coronary anatomy and multi-phase images for cardiac function assessment within a single beat. The tube current can be modulated within the single beat to support high quality coronary CTA and low dose functional images.

One-beat cardiac scan combined with fast CTA with only one injection of contrast media

The uCT 960+ allows a mixed acquisition mode of ECG-gated axial scans and non-ECG-gated axial or helical imaging with a fast switching time of less than 2 seconds. With this capability, the uCT 960+ is able to obtain motion-free coronary images, together with high quality cerebrovascular or peripheral vascular CT angiography with only one injection of contrast media. The dedicated protocols are provided for the following clinical scenarios.

- One stop acquisition for the evaluation of the heart with multiple phases, whole aorta and femoral arteries for TAVR/TAVI planning
- One stop acquisition for the evaluation of coronary arteries, pulmonary artery and aorta for triple-rule-out examination
- One stop acquisition for the evaluation of cardio and cerebral vessels

Neurology

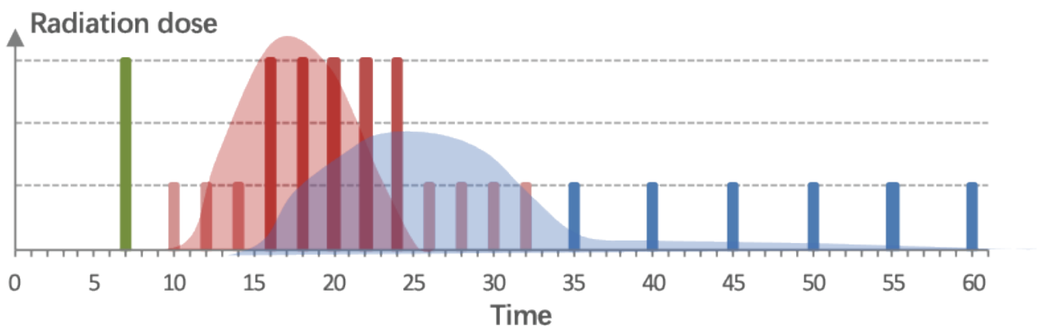
Single-rotation non-contrast brain imaging

The uCT 960+ allows for non-contrast brain scans with a single rotation without moving the table. The entire scan can be completed in a half-second to minimize the motion artifacts caused by involuntary movement of trauma, geriatric or other patients. The 160 mm coverage of the Z-Detector with our 3D anti-scatter-grid (ASG) enables effective suppression of scatter artifacts. The Real 3D Full reconstruction technology can reduce the cone beam artifact and ensure CT number uniformity across the entire volume of detector coverage.

One-stop stroke imaging solution

The non-contrast CT and 4D dynamic CTA can be acquired with one contrast injection, to provide comprehensive information from anatomy to function. The images can support the evaluation of intracerebral hemorrhage rule-out, anatomic vessel analysis and whole brain perfusion assessment.

The system allows for dynamic adjustment of radiation dose and sampling rates for different stages after the contrast injection, in order to provide adequate sampling rate and high quality images for certain stages of enhancement (such as the rapid contrast inflow and outflow from the cerebral arteries).



Emergency & Trauma

Every second counts in the Emergency Department. CT serves as an important imaging approach for the ED due to its capability of fast whole-body scans. The uCT 960+ is designed to further enhance this capability, providing imaging solutions with fast and multi-dimensional information for the clinical decision support in the ED.

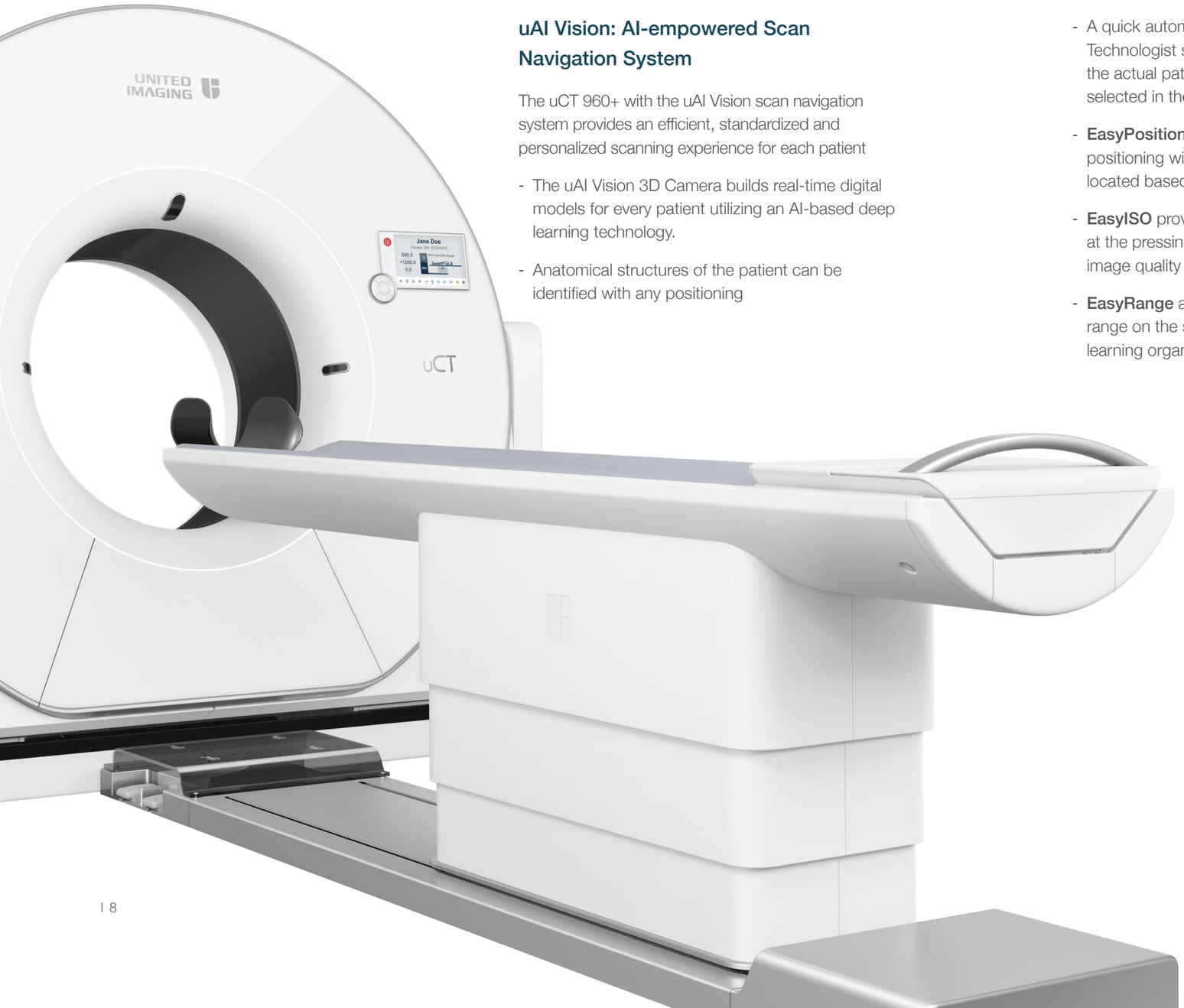
- One-stop stroke imaging solutions for physicians to assist with delivering the fastest care, sparing as much tissue as possible for the patient
- One-stop triple-rule-out for physicians to identify the causes of acute chest pain as soon as possible
- Fast whole-body or multi-group scanning can be enabled by either the fast helical mode with an 80 mm collimation and up to a 440 mm/s acquisition speed, or a 160 mm coverage axial mode, which can help to significantly reduce motion artifacts for patients who cannot hold their breath

Oncology

For the diagnosis and follow up of oncology patients, the uCT 960+ with the innovative Deep IR reconstruction algorithm, delivers images with reduced noise levels and streaking artifacts, improved low contrast detectability and a higher spatial resolution. Deep IR may also enable up to a 90% dose reduction for body examinations[1].

The uCT 960+ can acquire multiple images for whole organs, such as the liver, kidneys, pancreas, and bone. In addition it can greatly assist with perfusion evaluation and dynamic assessment of organ vascular flow or joint kinematic function.

[1]In clinical practice, the use of Deep IR may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.



Care for All

uAI Vision: AI-empowered Scan Navigation System

The uCT 960+ with the uAI Vision scan navigation system provides an efficient, standardized and personalized scanning experience for each patient

- The uAI Vision 3D Camera builds real-time digital models for every patient utilizing an AI-based deep learning technology.
- Anatomical structures of the patient can be identified with any positioning
- A quick automatic notification is provided to the Technologist should there be a mismatch between the actual patient position and the position selected in the protocol.
- **EasyPositioning** allows for single-click patient positioning with the scout scan range precisely located based on the protocol selected
- **EasyISO** provides the correct isocenter position at the pressing of button, in order to optimize the image quality and patient dose distribution
- **EasyRange** automatically sets the exam scanning range on the scout image, using an AI-based deep learning organ recognition technology.

Dedicated Pediatric Protocols with the ALARA Principle in Mind

- 60, 70 and 80 kVp scan capabilities reduce radiation dose while maintaining image quality for pediatric patients
- Single-rotation pediatric imaging is enabled by the wide 160 mm z-coverage, thus reducing the sedation requirements for some pediatric patients.

An 82 cm bore and 318 kg (700 lbs) table load capacity facilitates the scanning of large patients and enables flexible access and patient positioning in the gantry.

Z-Detector

The uCT 960+ features UIH's proprietary 160 mm Z-Detector as the foundation of the system. The outstanding electronic noise performance of the Z-Detector significantly improves the overall performance of the uCT 960+. Combined with the Real 3D Full reconstruction technology, the uCT 960+ delivers excellent whole organ image quality with full 160 mm coverage.

Fully Integrated Design

Compared with conventional solid-state detectors, the Z-Detector has combined the photodiode and the ADC into one Application-Specific Integrated Circuit (ASIC) by using Through-Silicon Via (TSV) technology, thus reducing the distance of the signal chain down to the micron level. This structure can largely reduce the electronic noise of the acquired signal, and provide high signal-to-noise-ratio data that enables the ultra-low noise of acquired data and reconstructed images.

Optimal 0.5 mm Pixel Size

Due to the outstanding electronic noise performance, the Z-Detector reveals an outstanding signal-to-noise ratio (SNR) and image quality with 299,520 elements of 0.5 mm pixel size. By acquisition with thinner slices, the Z-Detector delivers high spatial resolution images to demonstrate finer details and reinforce the patient's diagnosis.

3D Anti-Scatter Grid (ASG)

The adverse effect of scatter increases as you increase the detector size. The Z-Detector features a specially designed 3D ASG manufactured with 3D printing technology. With each grid focusing on the X-ray source, the 3D ASG effectively shields the scattered photons with a scatter-to-primary ratio of < 8.5%.

Z-Detector

Material	Solid-state GOS
Z-Coverage	160 mm
Number of detector rows	320 rows
Number of slices per rotation	640 slices
Size of detector element in Z-axis	0.5 mm
Number of total detector elements	299,520
Sampling rate	Up to 4800 views per rotation
Scatter-to-primary ratio (SPR)	<8.5%

X-Ray Tube & HV Generator

With the advanced liquid-metal bearing technology, the uCT 960+ X-ray tube allows for efficient heat dissipation and reliable performance. Compared with the conventional ball bearing tube, the X-ray tube of the uCT 960+ has the equivalent anode heat capacity of 30 MHU, and ensures fluent scanning with large patient throughput and consecutive high power examinations.

With a maximum of 100 kW power, and six levels of tube voltage from 60 kVp to 140 kVp, the uCT 960+ is able to provide flexible and optimized dose, and meet the requirements of different clinical applications.

X-Ray Tube and HV generator

Generator maximum power	100 kW
Tube voltage	60 kVp*, 70 kVp, 80 kVp, 100 kV, 120 kVp, 140 kVp
Tube current range	10 mA - 833 mA with 1 mA increments
Anode heat capacity	Equivalent 30 MHU compared to the performance of a conventional tube
Maximum anode heat dissipation	20 kW (1696 kHU/min)
Focal spot size (according to IEC 60336)	0.4 mm × 0.8 mm 0.6 mm × 0.8 mm 1.1 mm × 1.2 mm
Flying focal spot	x-y plane flying focal spot z plane flying focal spot

*: Optional

Gantry

The uCT 960+'s gantry supports the industry leading rotation speed of 0.25 s. Along with the 160 mm detector coverage, the uCT 960+ can image the whole heart in one heart beat.

The wide 82 cm bore provides a more comfortable examination experience, and flexible operation space.

Two groups of inner/outer laser lights define both internal and external scan planes to ±1 mm accuracy.

Two touchable and digital display panels and four control panels on both sides of the front and rear gantry cover allows the staff to work closely with the patient on all 4 sides of the system.

The breathing navigation system with both audio and visual instructions, help each patient understand the breath-hold requirements, leading to a more successful examination.

Gantry	
Bore	82 cm
Rotation speed	0.25 s*, 0.28 s*, 0.3 s*, 0.35 s, 0.38 s, 0.5 s, 0.6 s, 0.7 s, 0.8 s, 1.0 s, 1.5 s, 2.0 s
Temporal resolution	125 ms native temporal resolution 25 ms effective temporal resolution using CardioCapture*[1]
Gantry tilt capability	± 30° with 0.5° increment
Focus-to-detector distance	1118 mm
Focus-to-isocenter distance	600 mm
Slip ring	6.25 Gbps transfer rate
Laser lights	Lasers mark both internal and external scan planes with +/- 1 mm accuracy

*: Optional
[1] Enabled with CadioCapture & 0.25 s rotation speed.

Patient Table

The uCT 960+ features a next generation table with the capability of 318 kg (700 lbs) load capacity and a 440 mm/s travel speed. This facilitates the scanning of large patients, enables fast scanning for large anatomic ranges and helps minimize the motion artifacts for patients who cannot control their breathing.

The table also features:

- An integrated ECG module that moves together with the table during scanning, and helps to prevent the cables from being dragged and tangled. The real time ECG signal is displayed on the digital display panel and console UI.
- Foot pedals for fast positioning on both sides of the table.
- Ergonomic positioning accessories* to increase the patient comfort.
- A tray and holder can be included* to allow the placement of imaging-related supplies near the patient.
- An IV pole* can be included for the foot-end of the table, which will move with the table during the examination.

Patient Table	
Table load capacity	318 kg (700 lbs)
Horizontal scannable range	2000 mm for the scout, axial and helical scan modes
Horizontal movement range	0-2520 mm
Horizontal travel speed	2 mm/s-440 mm/s
Vertical range	480 mm-950 mm from the floor
Vertical travel speed	up to 55 mm/s
Positional precision	±0.25 mm
TG-66 compliant flat table top*	
Flat table top width	514 mm
Flat table top length	2060 mm
Load capacity with flat table top	300 kg (661 lbs)

Console & Reconstruction System

Items	Console computer	Reconstruction computer
CPU processor	Intel Xeon, 4-core, 3.5GHz (or higher configuration)	Intel Xeon, 32-core, 2GHz (or higher configuration)
RAM	24 GB	64 GB
Hard disk	2.92 TB Support the storage of up to 3,840,000 uncompressed DICOM images (512×512)	5 TB
Operating system	Windows 10	Windows 10
Monitor	24 Inch LCD monitor (1920×1200)	
Maximum reconstruction speed	60 images per second	

Image Quality

Spatial Resolution		Testing Condition
X-Y plane	22 lp/cm @ MTF 0% 17 lp/cm @ MTF 10% 12 lp/cm @ MTF 50%	120 kV, 200 mAs Collimation 20 mm Tested with the CTP682 module of the CATPHAN® 700 phantom
Z plane	20lp/cm@MTF 0%	120 kV, 200 mAs Collimation 40 mm Tested with CTP682 module of the CATPHAN® 700 phantom

Noise	Testing Condition	CT Number Display Range
≤ 0.37%	120 kV, 175 mAs Collimation 20 mm CTDIvol < 30 mGy Slice thickness 5 mm Tested with the D180 layer of UIH's System Phantom Reconstructed with filtered back projection (FBP)	-1024 HU ~ +8191 HU

Low Contrast Detectability	Testing Condition
2mm@0.3%, 22mGy 3mm@0.3%, 14mGy 4mm@0.3%, 7mGy 5mm@0.3%, 5mGy	120 kV Collimation 20 mm Slice thickness 10 mm Tested with the D180 layer of UIH's System Phantom Reconstructed with filtered back projection (FBP)

Scout Scan

The scout is used for setting the anatomical range of the follow-up scanning and reconstruction.

The uCT 960+ supports real-time scout reconstruction and display. The user can abort the scout scanning once the expected anatomy has been imaged.

kVp	60 kVp*, 70 kVp, 80 kVp, 100 kVp, 120 kVp, 140 kVp
Orientation	Frontal, lateral or dual scout
Table speed	200 mm/s
Maximum scan FOV	500 mm

Axial Scan

Axial scanning is performed with the “step and shoot” method. After data acquisition at a specific positon, the table moves to the next position at a preset interval.

kVp	60 kVp*, 70 kVp, 80 kVp, 100 kVp, 120 kVp, 140 kVp
Collimation	160 mm, 140 mm, 120 mm, 80 mm, 40 mm, 20 mm, 10 mm, 5 mm
Rotation speed	0.25 s*, 0.28 s*, 0.3 s*, 0.35 s, 0.38 s, 0.5 s, 0.6 s, 0.7 s, 0.8 s, 1.0 s, 1.5 s, 2.0 s
Maximum scan FOV	300 mm for pediatric head and body, adult head and small body, small cardiac 420 mm for medium body, medium cardiac 500 mm for medium & large body, large cardiac
Reconstruction FOV	40 mm ~ 500 mm (600 mm with extended FOV*)
Slice thickness	0.5 mm, 1 mm, 2 mm, 5 mm, 10 mm
Reconstruction matrix	512×512, 768×768*, 1024×1024*

*: Optional

Helical Scan

Helical scanning is a method of imaging where the table moves at a continuous speed while the tube and detector simultaneously rotate around the patient, during a continuous X-ray exposure.

kVp	60 kVp*, 70 kVp, 80 kVp, 100 kVp, 120 kVp, 140 kVp
Collimation	80 mm, 40 mm, 20 mm
Rotation speed	0.25 s*, 0.28 s*, 0.3 s*, 0.35 s, 0.38 s, 0.5 s, 0.6 s, 0.7 s, 0.8 s, 1.0 s, 1.5 s, 2.0 s
Pitch	0.1 ~ 2.0
Maximum scan FOV	300 mm for pediatric head and body, adult head and small body, small cardiac 420 mm for medium body, medium cardiac 500 mm for medium & large body, large cardiac
Max. continuous exposure time	120 s*/100 s
Reconstruction FOV	40 mm ~ 500 mm with 1 mm step (600 mm with extended FOV*)
Slice thickness	0.5 mm~10 mm with 0.1 mm step
Reconstruction matrix	512×512, 768×768*, 1024×1024*

*: Optional

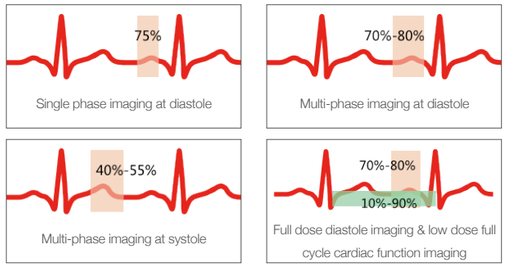
Cardiac Scan

The uCT 960+ supports both prospectively ECG-gated axial and retrospective ECG-gated helical scanning for cardiac imaging.

Prospective ECG-gated axial scan

- The system triggers the X-ray exposure based on the R-tag of the ECG signal and the preset gating range. The uCT 960+ supports the setting of three (3) gating ranges within one heart beat by relative phase (%) or absolute delay (ms) after the R-tag.
- CardioAssist enables the automatic recommendation of optimal gating ranges based on the heart rate measurement during the scanning simulation.
- CardioAdapt allows the system to automatically rescan if an irregular heart beat is detected during scanning, and allows for ECG editing after scanning.
- The uCT 960+ has a streamlined and intelligent workflow, from scanning preparation to image reconstruction, with fully integrated features on the console, including CardioAssist, CardioAdapt, CardioXphase* and CardioCapture*.

kVp	60 kVp*, 70 kVp, 80 kVp, 100 kVp, 120 kVp, 140 kVp
Collimation	160 mm, 140 mm, 120 mm
Rotation speed	0.25 s*, 0.28 s*, 0.3 s*, 0.35 s per 360°
Temporal resolution	125 ms native temporal resolution 25 ms effective temporal resolution using CardioCapture*
Maximum scan FOV	300 mm for small cardiac 420 mm for medium cardiac 500 mm for large cardiac
Slice thickness	0.5 mm, 1 mm, 2 mm, 5 mm, 10 mm



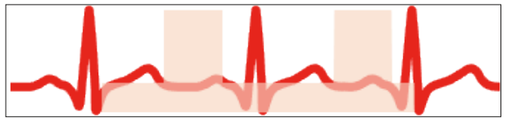
*: Optional

Cardiac Scan

Retrospective ECG-gated helical scan

- The system continuously acquires data in a helical mode with a small pitch, while simultaneously recording the ECG and synchronizing it to the acquired image data. Then, the images of the preferred R-to-R phases may be reconstructed.
- ECG-gated dose modulation can be applied to use a full dose during a preferred phase, and to reduce the dose during the rest of the cardiac cycle. The full dose range can also be recommended by CardioAssist. If an irregular or ectopic beat is detected, CardioAdapt can be set to automatically and immediately adjust the dose to ensure proper image quality across a phase that may have moved due to the irregular heart beat. ECG editing may also be used as well, in this instance.
- The optimal phase with the minimum amount of coronary motion can be automatically found using CardioXphase*.

kVp	60 kVp*, 70 kVp, 80 kVp, 100 kVp, 120 kVp, 140 kVp
Collimation	80 mm, 40 mm
Rotation speed	0.25 s*, 0.28 s*, 0.3 s*, 0.35 s per 360°
Pitch	0.1~0.5
Temporal resolution	125 ms native temporal resolution
Maximum scan FOV	300 mm for small cardiac 420 mm for medium cardiac 500 mm for large cardiac
Slice thickness	0.5 mm ~ 10 mm with 0.1 mm step



Retrospective helical scanning with ECG-gated dose modulation

Perfusion Scan*

Stationary perfusion scan

The uCT 960+ enables a whole organ perfusion acquisition with up to 160 mm coverage without moving the table. This allows for a perfusion acquisition of the brain, liver, kidneys, pancreas and other organs. with uniform contrast along the z-direction.

Dynamic perfusion scan

For a scan range over 160 mm, the uCT 960+ enables dynamic perfusion scanning in the helical mode with the table moving back and forth at a variable pitch. The uCT 960+ supports the a maximum 400 mm scanning range with this scan mode.

The uCT 960+ allows a flexible sampling rate to be defined by the user during perfusion scanning. In addition to a perfusion evaluation, this scan mode can also support assessment of blood flow dynamics or joint kinematic function.

Dual-Energy Scan*

The uCT 960+ allows for the acquisition of two CT images of the same anatomical location using different tube voltages and currents. The 80 kVp and 140 kVp setting is used for the low and high energy imaging with separately adjustable currents. The dual energy images can be combined and used for the visualization and further analysis of the anatomical and pathological structures.

Trigger Modes for Contrast Scan

Bolus Tracking: The contrast CT value of a user-defined ROI will be tracked and measured in real-time by consecutive scanning after contrast injection commences. Once the desired ROI value is reached, the main contrast scan will be initiated either automatically or manually (depending on the preference of the Technologist).

Test Bolus: After an ROI is placed, the Technologist can observe the time-density curve over a preset time period of scanning following a small contrast injection. The post-injection delay can be obtained and used for the main contrast scan, based on the time-to-peak analysis.

*: Optional

Image Reconstruction

Real 3D Full cone beam reconstruction

As the detector coverage size in the z-axis increases, the adverse effect of wide, cone beam imaging and scatter radiation become more severe. The uCT 960+ features the dedicated Real 3D Full reconstruction technology, that is designed to mitigate cone beam artifacts. Real 3D Full reconstruction can effectively maintain the HU uniformity and reduce the artifacts across the full 160 mm volume, which ensures diagnostic image quality with a single axial scan. Real 3D Full is especially adept at preserving the temporal resolution and image quality in one-beat whole-heart examinations.

Real Time 3D*

Real Time 3D is an innovative solution that will automatically produce MPR or VR preview images in real-time (along with the axial real-time preview images) as the acquisition is taking place. This feature can help the Technologist confirm that the desired anatomical area has been imaged, and/or assess the effectiveness of the contrast bolus very easily.

Online MPR*

Online MPR can automatically generate MPR/MIP/minMIP images with prospective settings in the protocols. The reformatted views for the intervertebral disc spaces can be generated based on the automatic recognition on the lateral scout image. These images can be transferred to the PACS automatically.

*: Optional

Deep IR*

Deep IR is an innovative image reconstruction method that combines a full modal-based iterative reconstruction with a cutting edge, AI-based deep learning technology. Deep IR keeps the full consideration of precise modeling of optics, noise, anatomy and physics statistics during the iterative loop of forward and backward projection, between the raw data domain and the image domain. Deep IR has the unique ability to significantly reduce image noise and artifacts, while at the same time greatly improving low contrast detectability and spatial resolution.

A common problem with dose reduction in general is that the noise texture in the image progressively appears more unnatural, the lower the dose. Deep IR addresses this by incorporating an AI-based deep learning de-noising technology that incorporates a strong de-noising capability along with desirable noise patterns. With the combination of two very powerful technologies, Deep IR has the potential to establish a new benchmark of low-dose imaging with excellent image quality.

Compared with traditional filtered back projection (FBP), Deep IR enables:

- A dose reduction of 62%-90% at the same image quality (LCD)[1]
- An image noise reduction of 90%-98% together with an LCD improvement of 37%-151% (1.37x-2.51x)
- A spatial resolution improvement of 64%-115% (1.64x-2.15x)
- Streak artifact suppression
- A preferred noise texture and boundary sharpness

MAC® Metal Artifact Calibration*

MAC® is able to reduce metal artifacts and improve image quality while preserving body structure and anatomic details.

The calibration algorithm preserves the raw data that is not affected by metal; while the high-frequency signal and the low-frequency signal with metal information involved is independently extracted and utilized for restoration. Meanwhile, the signal that is less affected by metal is extracted for weighting according to the shape of metal.

High-Resolution Reconstruction Matrix*

The high-resolution reconstruction matrix (768×768, 1024×1024) augments spatial resolution and demonstrates anatomic detail especially in cases where smaller field of views are preferred (such as with IAC, small joints and high resolution lung imaging).

*: Optional

[1]Image quality as defined by low contrast detectability. In clinical practice, the use of Deep IR 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.

Low Dose Technology

The outstanding low electronic noise performance of **the Z-Detector** provides a significant advantage for low dose applications and obese scanning where the signals are very low. **The 3D ASG (Anti-Scatter Grid)** effectively shields the scattered photons without compromising the utilization ratio of non-scattered X-ray.

Three sizes of the bowtie filters optimize the X-ray beam filtration for the body, head, and cardiac imaging, as well as for adult and pediatric applications.

The EasyISO feature (based on uAI Vision 3D Camera)* provides the correct isocenter position, and optimizes the image quality and patient dose distribution.

The 60*, 70 and 80 kVp scan capabilities reduce radiation dose while maintaining image quality, especially for smaller adults and pediatric patients.

The innovative image reconstruction methods, including **the Deep IR*** and **the KARL 3D***, enable low-dose imaging with excellent image quality.

The uCT 960+ complies with the NEMA XR-29 Standard.

- The CTDIvol (CTDI volume) and DLP (Dose Length Product) are computed and displayed during the scan prescription to provide the Technologist with the dose information. After the examination, the CTDIvol, DLP and phantom type of each series and the cumulative values of the examination are saved in a DICOM Structured Dose Report. The report can be archived.
- A set of reference protocols for adult as well as pediatric patients is included on each system. These protocols cannot be modified; but they may be copied and tailored to meet the needs of each individual customer.
- The CT Dose Check allows the user to define the Dose Notification Values for the CT protocols, as well as the Dose Alert Values. The system checks against the Notification Value and issues a notification if the estimated dose for the scan is above the limit. The system also checks against the Alert Value and requires the user to change the scan parameters to lower the dose, or it requires sign-off and acknowledgment of the user to proceed without a change to the scan settings.
- The automatic exposure control (AEC) is supported with the Auto ALARA mA feature.

Auto ALARA mA

Auto ALARA mA is an automatic exposure control function designed to tailor the radiation dose to each patient based on the patient's size, attenuation, anatomy and the user's requested quality criterion. Based on the estimated size and attenuation level of different planes along the scan range, Auto ALARA mA generates the optimal dose distribution and performs a 3D mA adjustment in order to achieve the requested quality criterion.

Organ-Based Auto ALARA mA with AI-based Deep Learning Technology*

A combined chest and abdomen scan is commonly required for many clinical scenarios, such as trauma imaging, as well as the follow-up of oncology patients, for instance. Since the clinically tolerable image noise levels are different for the chest, compared to the abdomen, using the same parameters and expected quality criterion for dose modulation may either underexpose the abdomen or overexpose the chest.

Auto ALARA mA can be further optimized with the automatic recognition of the chest and abdomen on the scout with an AI-based, deep learning technology. Consequently, the dose modulation parameters can be optimized for the chest and abdomen, respectively. This feature provides a more precise dose modulation with expected image quality and a lower dose to the patient.

Auto ALARA kVp*

Auto ALARA kVp is an automatic kVp feature designed to select the suitable kVp for each patient according to the patient's size, anatomy and clinical examination type. Auto ALARA kVp can work together with Auto ALARA mA to optimize dose and image quality, as well as reduce the manual adjustment of dose for patients of different sizes.

ECG-Gated Dose Modulation

For cardiac imaging, ECG-gated dose modulation can be applied to use a full dose during a preferred phase, and to reduce the dose during the rest of the cardiac cycle. ECG-Gated Dose Modulation can be used with the single-rotation Axial mode or with the Helical mode, for a cardiac examination.

*: Optional

*: Optional

Image Review & Post-Processing

Image Review

- WW/WL Images
- Zoom/Pan/Flip/Change the image orientation
- Cine mode image review
- 2D & 3D image rotation
- Reference lines on scout while reviewing images
- Shortcuts for saving images

Image Editing & Measurement

- Automatic removal of table top
- Virtual scalpel for tissue cutting
- Image subtraction
- Pseudo color
- Image annotation & label
- ROI and profile statistical evaluation including CT value, area/volume, standard deviation, mean value, min./max. values, and histogram
- Distance & angle measurement

3D Reconstruction

- 3D volume rendering (VR) with preset templates for different clinical applications
- Multi-planar reconstruction (MPR)
- Maximum/Minimum intensity projection (MIP/MinIP)
- Surface shaded display (SSD)
- Curved planar reconstruction (CPR)
- Batch of parallel/ tangential reconstruction

3D Post Processing

- Probe
- Automatic bone removal of body
- Automatic bone removal of head & neck*
- Region growing and volume analysis for different types of tissue

*: Optional

Data Management

DICOM

The uCT 960+ fully complies with the DICOM 3.0 communications protocols, which allows connectivity to DICOM 3.0 compliant PACS, workstations, and printers, etc. and supports read/write, transfer, and print of the DICOM format data.

MPPS*

The uCT 960+ supports status information exchange during the study process. It delivers information, such as the user action in the beginning, end or during the examination, to the administrator, PACS or RIS. This feature also allows real-time feedback and efficient management.

Networking

Supports 10/100/1000 Mbps network speeds

DVD/CD/USB Archiving

Supports the storage of images, information and associated image viewing software on DVD/CD/USB media

Filming

- Customizable film layouts and configurable image text
- Digital film documentation
- Support of a laser printer interface

Environmental Requirements

Scan Room

Temperature	18 ° C ~ 24 ° C
Humidity	30% ~ 70% (non-condensing)
Atmosphere pressure	70 kPa ~ 106 kPa

Operator's Room

Temperature	15 ° C ~ 30 ° C
Humidity	30% ~ 70% (non-condensing)
Atmosphere pressure	70 kPa ~ 106 kPa

Power Requirements

Power type	Three-phase distribution source
Voltage	380 VAC 90% ~ 110% 400 VAC 90% ~ 110% 415 VAC 90% ~ 110% 440 VAC 90% ~ 110% 460 VAC 90% ~ 110% 480 VAC 90% ~ 110%
Frequency	50 ± 1 Hz / 60 ± 1 Hz
Power input	≥ 160 kVA

Component Dimensions

Component Dimensions (L × W × H)

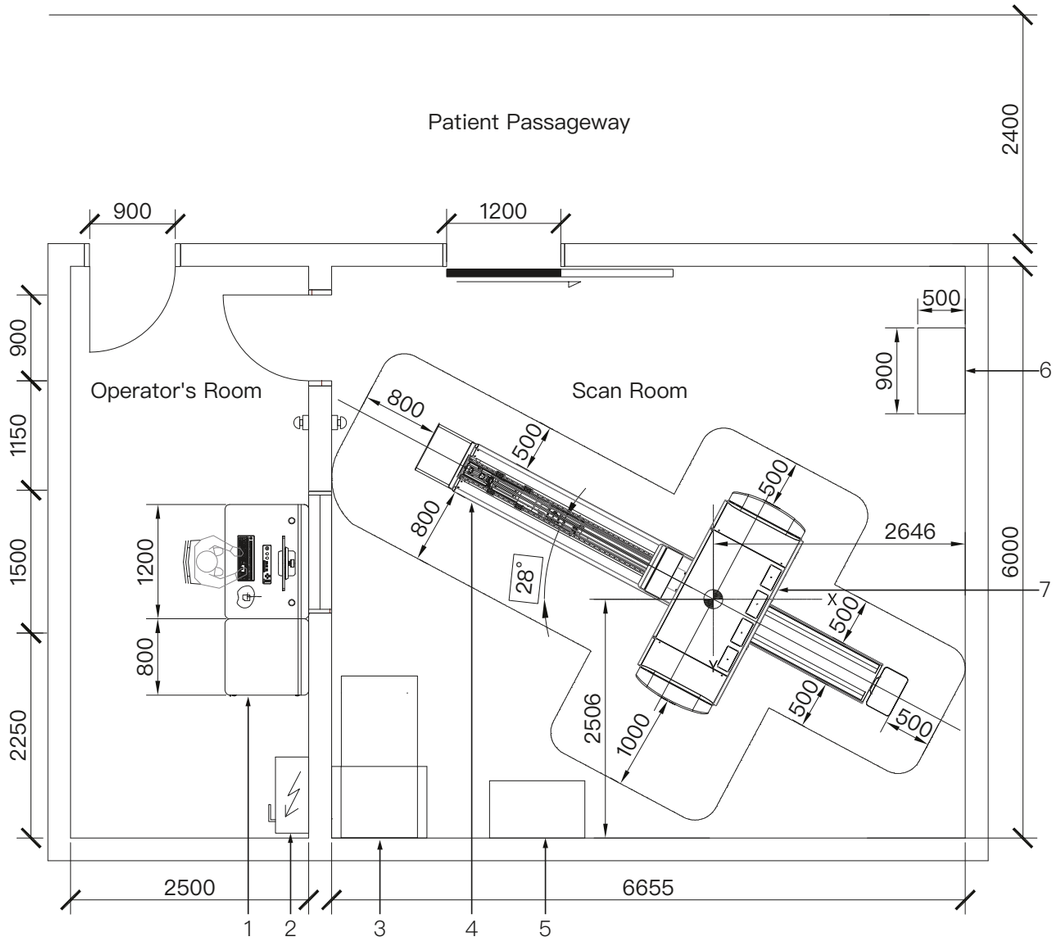
Gantry	2330 mm × 930 mm × 1975 mm
Table	2673 mm × 560 mm × 1005 mm
Power supply cabinet	700 mm × 750 mm × 1510 mm
Reconstruction server cabinet	600 mm × 1000 mm × 1248 mm
Accessories cabinet*	900 mm × 500 mm × 1090 mm

Recommended Room Size

Scan Room Size	6.0 m × 6.6 m
Scan Room Height	≥ 2.8 m
Operator's Room Size	6.0 m × 2.5 m

*: Optional

Recommended Room Layout (unit: mm)



1. Console table & cabinet
2. Power distribution cabinet
3. Power supply cabinet (PSC)
4. Patient table
5. Reconstruction server cabinet
6. Accessories cabinet*
7. Gantry

Warranty

Dear customers:

The published company warranty in effect on date of Shipment shall apply. Right reserved to make changes.

Compliance

The product's design, manufacturing and after-service are based on the requirements of the ISO 13485 standard, and in compliance with the applicable medical device safety standards, such as IEC 60601-1, IEC 60601-2-44 and EMC.

The X-ray tube included in the product meets the standards of IEC 60601-1 and IEC 60601-2-28.

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Scan to follow UIH on WeChat

UNITED IMAGING

Edition ID: 88000228-MPD-DAT-02

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