



> Introduction



> Impressive details.
Unveiled.



> Patient reach.
Unlocked.



> Meaningful answers.
Uncompromised.



> Consistent precision.
Unvaried.



> Intuitive operation.
Uncomplicated.



> Get the most out of
your scanner.

NAEOTOM Alpha® with Quantum Technology

CT redefined.

siemens-healthineers.us/NAEOTOM-Alpha



Experience a defining moment in CT

NAEOTOM Alpha with Quantum technology, the world's first photon-counting CT, is nothing less than the reinvention of computed tomography. It offers a new way to generate clinical results, based on the revolutionary direct signal conversion of its QuantaMax detector.

NAEOTOM Alpha helps users impact treatment outcomes with clinical results that are truly meaningful, precise, and reproducible. Let these results guide your therapeutic decision-making and potentially scan patients previously excluded—thanks to a range of clinical options, never seen before in conventional CT scanners, high-resolution images at minimal dose, and breakthrough consistency. To keep high-end technology accessible, we made sure that NAEOTOM Alpha is easy and intuitive to operate.

NAEOTOM Alpha.
CT redefined.



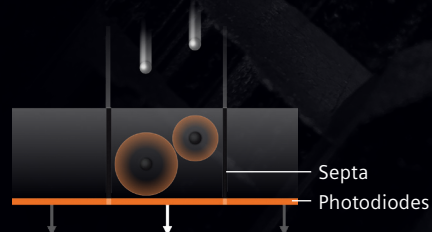
A new era in computed tomography

1975
Xenon gas CT era

Then:

Energy-integrating detector

In conventional detectors, X-rays are first converted into light. Photodiodes then convert the light into electrical signal, and analog-digital converters digitize the signal.



1997
Solid-state scintillator CT era

2021

Photon-counting CT era

Now:

Photon-counting detector
In photon-counting detectors, semiconductor materials are able to convert X-rays directly into electric signal pulses.



Enabling a new level of clinical decision-making with Quantum Technology

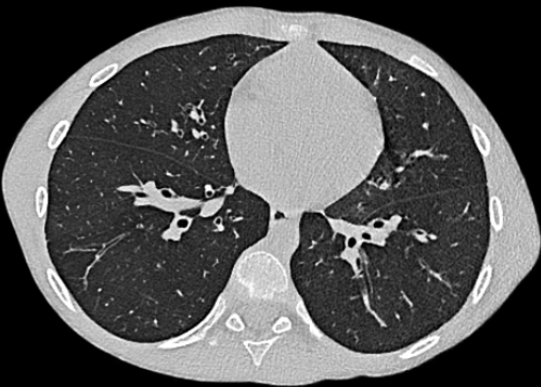
- › Equal energy contribution
Contrast-rich images
- › Smaller detector pixels
Same dose at high spatial resolution
- › Elimination of electronic noise
Lower dose
- › Intrinsic spectral sensitivity
Multi-spectral information in every scan



Impressive details. Unveiled.

NAEOTOM Alpha is a quantum leap that redefines how high resolution can be utilized in CT imaging. It is a profound change of the dose-vs-image quality equation, offering a new level of detail while keeping dose to a minimum.

Visualize small lesions and fine details – to aid clinical decisions in cardiology, oncology, pulmonology, or neurology.



High resolution at low dose
Get an unmatched* level of detail at full dose efficiency – to evaluate fine structures in all anatomical areas.

High resolution pediatric lung scan

Scan mode: **QuantumSn**
Image type: **73 keV monoenergetic**
Reconstruction: **0.6mm, 512² matrix**
CTDI_{vol}: **0.93 mGy**
Scan time: **0.4 sec**



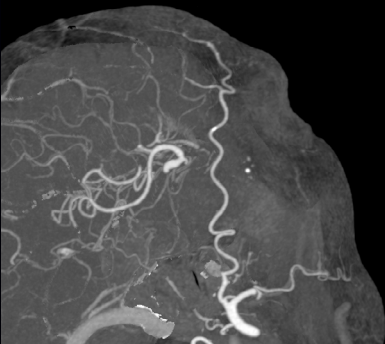
Ultra-high resolution at standard dose
Quantum High Resolution helps you evaluate fine lesions – using the highest spatial resolution ever provided on a CT system of the major vendors.*

Ultra-high resolution wrist CT

Scan mode: **QuantumUHR**
Image type: **MPR**
Reconstruction: **0.2mm, 512² matrix**
CTDI_{vol}: **4.6 mGy**

Ultra-high resolution in neuro imaging
Depict small cerebral structures, vessels, calcifications, devices at a high level of detail.

Neuro CTA
Scan mode: **Quantum UHR**
Image type: **Curved MPR**
Reconstruction: **0.2 mm, 512² matrix**
CTDI_{vol}: **10 mGy**

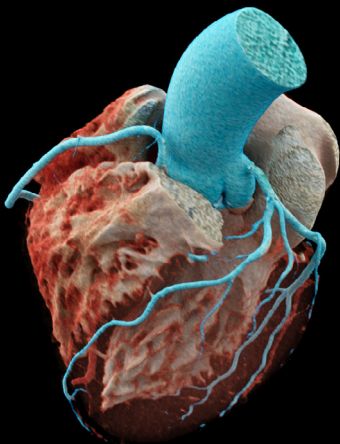


“Up to 40% of all ischemic strokes are due to occlusions in M2 or M3 vessels. With NAEOTOM Alpha we can optimize the visibility of such small-sized arteries in the brain, and potentially better diagnose occlusions. This may expand the number of patients treated for their acute ischemic stroke.”

Dr. Pieter Jan van Doormal, Neurointerventionalist, Erasmus MC, Rotterdam, The Netherlands

Ultra-high resolution in cardiac imaging
Visualize small coronary vessels, stents, and plaques in high resolution without motion artifacts.

Coronary CTA
Scan mode: **Quantum Cardiac HD**
Image type: **Cinematic VRT**
Reconstruction: **0.2mm, 512² matrix**
CTDI_{vol}: **38.2 mGy**
Temporal resolution: **66 ms**



“With NAEOTOM Alpha, thanks to Quantum resolution, we now have ultra-high resolution in cardiac CT, which may improve the visualization of early-state small plaques or restenosis.”

Joe Schoepf, MD, Medical University of South Carolina, Charleston, SC, USA



*Data on file
Clinical images courtesy of Universitätsklinikum Augsburg, Augsburg, Germany and
Ersamus Medical Center, Rotterdam, The Netherlands

Clinical images courtesy of Erasmus Medical Center, Rotterdam, The Netherlands
and Universitätsspital Zürich, Zurich, Switzerland



Patient reach. Unlocked.

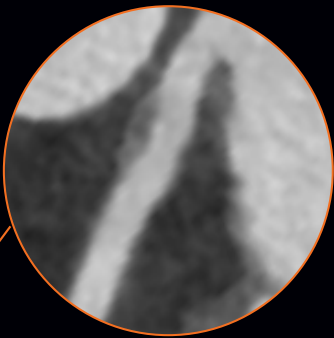
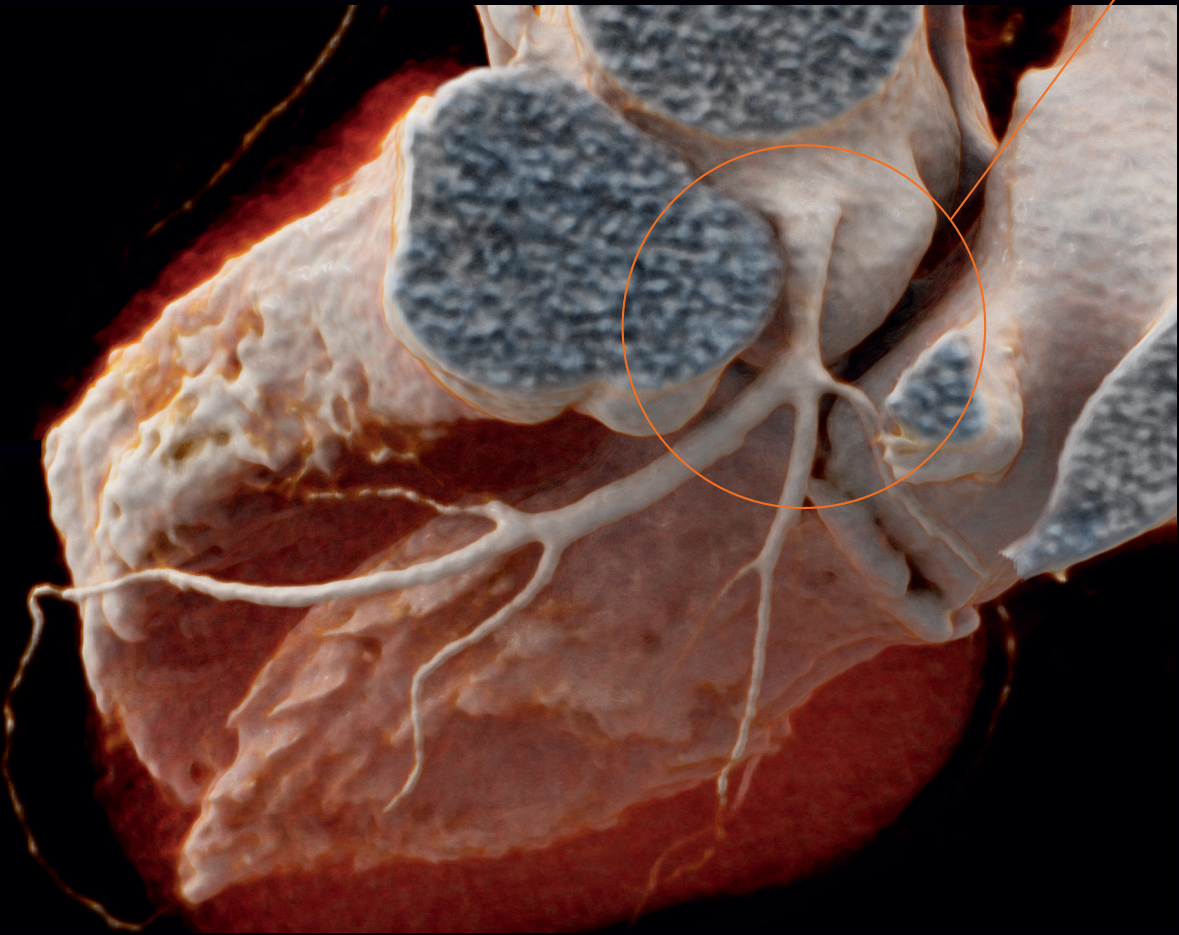
NAEOTOM Alpha expands the patient population that can be addressed with CT. It offers spectral imaging independent of scan speed and of temporal or spatial resolution.

This way, NAEOTOM Alpha makes it possible to examine previously excluded patients, to perform scans that were not practicable before, and to increase follow-up frequency if desired.

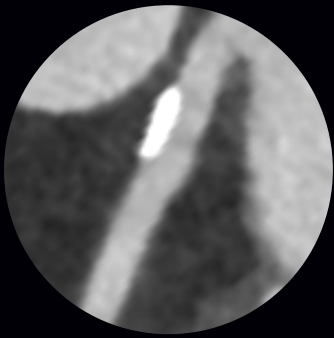
PURE Lumen*
PURE Lumen creates a dedicated reconstruction free of calcifications or blooming, helping you perform coronary CTA even in patients with a high CaScore.

Low-dose performance
By eliminating electronic noise, the QuantaMax detector offers an improved signal-to-noise ratio and helps further reduce dose for screening or dose-sensitive patients.

Improved image contrast
Quantum Technology makes possible better weighting of low-energy quanta – which potentially reduces contrast media volume.



PURE Lumen image



Original image

- › Evaluate even heavily calcified vessels
- › Create virtual non-calcium maps
- › Perform coronary CTA exams also in patients with high CaScore
- › Full spectral information at 66 ms Dual Source temporal resolution

Coronary CTA with PURE Lumen
Scan mode: QuantumPlus
Image type: Cinematic VRT, Curved MPR
Reconstruction: 0.4 mm, 512² matrix
Temporal resolution: 66 ms

Clinical image courtesy of Universitätsklinikum Augsburg, Augsburg, Germany
**PURE Lumen (Vascular Calcium Removal (VCR)) can be used to measure vessel (e.g. coronary) stenoses by removing the contributions of calcium from images, based on a phantom evaluation (Allmendinger T. et al., 2022, Investigative Radiology).*



Meaningful answers. Uncompromised.

With NAEOTOM Alpha, the dilemma of having to decide before a scan which information is most relevant is a relic of the past. It redefines clinical decision-making by providing all relevant CT results with one single scan.

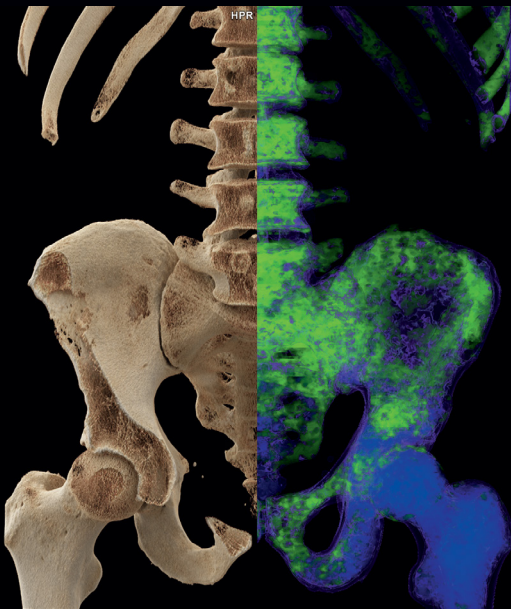
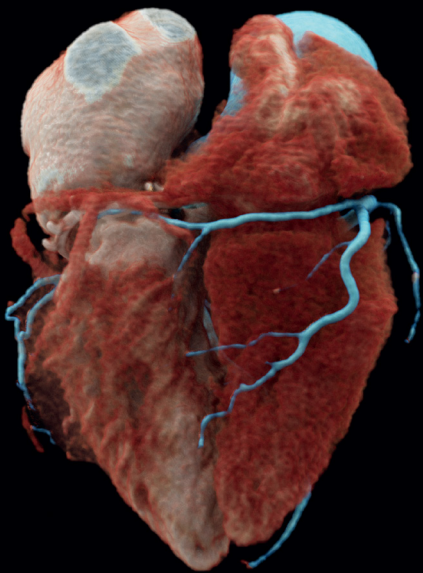
Deduct powerful answers for patients and referring physicians.

Spectral imaging at Dual Source temporal resolution

As a Dual Source system, NAEOTOM Alpha offers a temporal resolution down to 66 ms—offering spectral imaging even for the most challenging cases.

Spectral imaging at high spatial resolution

With NAEOTOM Alpha, spectral maps are available in high detail—enabling functional evaluation with high precision.



Spectral imaging at Turbo Flash speed

Even at the highest scan speed, NAEOTOM Alpha offers full spectral imaging options—for pediatric patients, high-pitch CTA exams, and more.

- › Spectral imaging for high-pitch CTA exams
- › Spectral imaging in patients who cannot hold their breath
- › Spectral imaging in pediatric patients without sedation

High-pitch TAVR planning scan

Scan mode:	QuantumPlus
Image type:	Cinematic VRT, 70 keV monoenergetic
Reconstruction:	0.6 mm, 1,024 ² matrix
CTDIvol:	6.04 mGy
Pitch:	3.2

Clinical images courtesy of Centre Cardio-Thoracique de Monaco, Monaco; Universitätsspital Zürich, Zurich, Switzerland; Erasmus Medical Center, Rotterdam, Netherlands



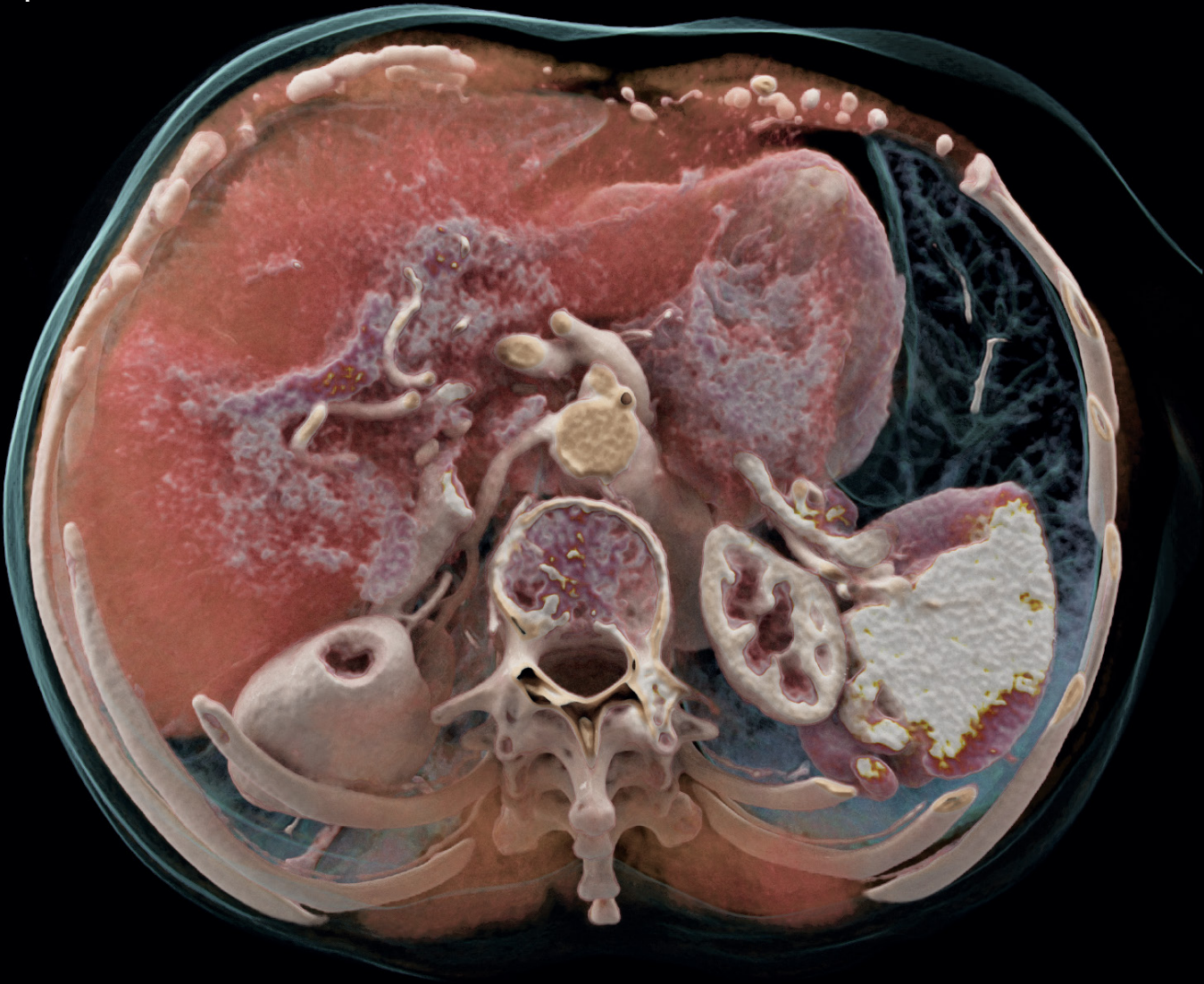
Consistent precision. Unvaried.

NAEOTOM Alpha redefines diagnostic consistency by providing monoenergetic images as the standard image type for every scan. Perform numerical measurements that are independent from the selected scan parameters—and build your clinical decisions on standardized results throughout the patient journey.

NAEOTOM Alpha is the ticket to true precision medicine and a fundamental step toward high quality data for potential AI applications down the line.

Monoenergetic images as default image type
For every scan, NAEOTOM Alpha provides monoenergetic images that are independent of scan parameters—for consistency and comparability.

Stable Hounsfield values
For quantitative CT evaluation, NAEOTOM Alpha provides stable HU numbers—even in low-dose scans.



› Analyze, evaluate, and compare scans using the ideal monoenergetic images for the clinical question at hand

Follow-up after liver transplantation

Scan mode:	QuantumPlus
Image type:	Cinematic VRT, 70 keV monoenergetic
Reconstruction:	0.6 mm, 1,024 ² matrix
CTDI _{vol} :	3.2 mGy

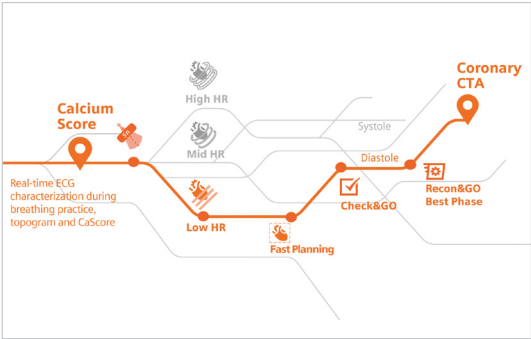
Intuitive operation. Uncomplicated.

NAEOTOM Alpha redefines how sophisticated CT technology can be utilized. It marks the first time we provide our proven usability features in a premium high-end CT. The system supports and guides users throughout the scanning workflow, while AI-enabled solutions help radiologists when reading cases.

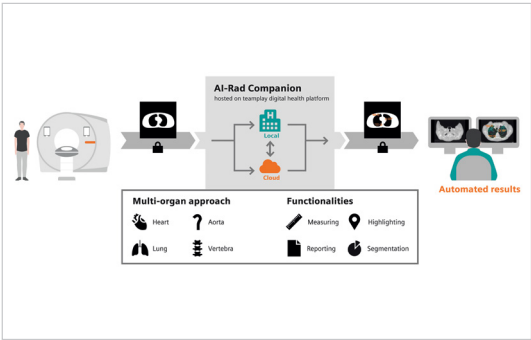
Unleash the full power of NAEOTOM Alpha, safeguard consistency at high quality levels, and deduct powerful answers for patients and referrers.



GO technologies
Accessible via tablet or workstation, GO technologies are a set of technologies that standardize and simplify all departmental processes—from patient setup to image distribution, archiving, and reading.



myExam Companion
Using the new possibilities of digitalization, myExam Companion guides operators through diagnostic procedures, so that they can interact easily and naturally with both patient and technology.



AI-Rad Companion
AI-powered algorithms provide automatic post-processing of imaging datasets. Identifying and quantifying relevant anatomies and abnormalities, they put findings into a diagnostic context—and allow for a fast and accurate diagnosis.

The world's first photon-counting CT

Where high-tech meets usability and patient-friendliness: NAEOTOM Alpha is a powerful package that truly redefines computed tomography.

Quantum Technology

Equal energy contribution, small detector pixels, eliminate electronic noise, intrinsic spectral sensitivity.

QuantaMax detectors

Cadmium telluride-based photon-counting detectors with 6 cm z-coverage and over 1.3M detector elements.

Dual Source technology

NAEOTOM Alpha is a Dual Source system, enabling a high pitch of up to 3.2 and a temporal resolution down to 66 ms.

AI-enabled user experience

Based on the mobile workflow with GO technologies and up to five dockable tablets, myExam Companion, myExam Satellite, and the FAST 3D Camera.

teampay digital health platform

Access innovations and solutions in digital health and AI through our digital platform—combining accessibility, flexibility, scalability, and connectedness for your future readiness.

Integrated guidance for interventions

myNeedle Companion and myNeedle Laser for comprehensive support of interventional needle procedures.



➔ Learn more about the NAEOTOM Alpha

Technical specifications

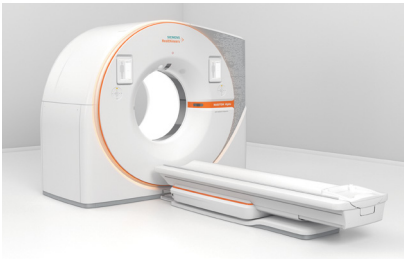
Slices:	2 x 144
mA:	Up to 1,300 mA
Temporal resolution:	Down to 66 ms
kV:	70, 90, 120, 140 kV Sn100, Sn140 kV
z-coverage:	144 x 0.4 mm 120 x 0.2 mm (UHR)
Spatial resolution:	0.11 mm (in-plane) in UHR mode
Power:	2 x 120 kW
Max. scan speed:	Up to 737 mm/s (with Turbo Flash)
Table load:	Up to 675 lbs

Uncompromised patient experience



Large 82 cm bore

- Enhance patient comfort and help them relax.
- Facilitate positioning of patients with reduced mobility.
- Ease interventional procedures with extra space.



Multipurpose table

- The table-top moves independently of the base for easy access to patients inside the gantry.
- It can be lowered extremely close to the floor for easy access for patients.



Visual Patient Instruction

- Ease the scanning procedure for hearing-impaired patients.
- Help patients comply easily with breath-hold times with an intuitive graphical countdown.



Siemens Healthineers AG (listed in Frankfurt, Germany: SHL) pioneers breakthroughs in healthcare. For everyone. Everywhere. As a leading medical technology company headquartered in Erlangen, Germany, Siemens Healthineers and its regional companies are continuously developing their product and service portfolio, with AI-supported applications and digital offerings that play an increasingly important role in the next generation of medical technology. These new applications will enhance the company's foundation in in-vitro diagnostics, image-guided therapy, in-vivo diagnostics, and innovative cancer care.

Siemens Healthineers also provides a range of services and solutions to enhance healthcare providers' ability to provide high-quality, efficient care. In fiscal 2022, which ended on September 30, 2022, Siemens Healthineers, which has approximately 69,500 employees worldwide, generated revenue of around €21.7 billion and adjusted EBIT of almost €3.7 billion.

Further information is available at www.siemens-healthineers.com.

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