NAEOTOM Alpha® with Quantum Technology
CT redefined.

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Experience a defining moment in CT

Every once in a while, existing technologies advance in a way that nothing will ever be the same. On these occasions, innovation catapults a product category forward and forces us to rethink what we see as set. This is one of these moments.

We are proud to introduce the world’s first photon-counting CT: NAEOTOM Alpha® with Quantum Technology is nothing less than the total reinvention of computed tomography. It offers a radical 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 answers that are truly meaningful, precise, and reproducible. Benefit from confident therapeutic decision-making and potentially scan patients previously excluded – thanks to a range of clinical options never seen before, 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
1997: Solid-state scintillator CT era
2021: Photon-counting CT era

Then:
Energy-integrating detector
In current detectors, X-rays are first converted into light. Photodiodes then convert the light into an electrical signal, and analog-digital converters digitize the signal.

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
› Eliminate 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 – for high diagnostic confidence in cardiology, oncology, or pulmonology. More details. Convincing answers.

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 lung CTA
Scan mode: QuantumPlus
Image type: 70 keV monoenergetic
Reconstruction: 0.4 mm, 1,024² matrix
CTDvol: 3.57 mGy
Rotation time: 0.25 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.

Ultra-high resolution abdomen CTA
Scan mode: QuantumPlus
Image type: Cinematic VRT
Reconstruction: 0.2 mm, 1,024² matrix
CTDvol: 6.26 mGy

“Our current CTs are great, but what we are still missing is the ability to visualize small structures – especially in patients with heavy calcification and/or stents.”
- Rich Bayer, MD, Medical University of South Carolina, Charleston, SC, USA

“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

Clinical images courtesy of Erasmus Medical Center, Rotterdam, Netherlands
Clinical image courtesy of Centre Cardio-Thoracique de Monaco, Monaco
Patient reach. Unlocked.

NAEOTOM Alpha redefines which patient populations 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 confidently examine previously excluded patients, to perform scans that were not practicable before, and to increase follow-up frequency if desired. More clinical options. More opportunities for growth.

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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. No regrets. No compromises.

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 higher detail than ever before – enabling functional evaluation with high precision.

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

1) Spectral post-processing applications subject to local availability.
**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. Powerful technology. Easy to use.**

**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.

**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 better data for potential AI applications down the line. Consistent results. Every scan. Every time.

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

**Arterial phase for liver tumor staging**
- **Scan mode:** QuantumPlus
- **Image type:** Cinematic VRT, 65 keV monoenergetic
- **Reconstruction:** 0.6 mm, 512\(^2\) matrix
- **CTD\(_{50\%}\):** 9.3 mGy

**Stable Hounsfield values**
For quantitative CT evaluation, NAEOTOM Alpha practically eliminates instability of HU numbers – even in low-dose scans.

**Clinical images courtesy of Erasmus Medical Center, Rotterdam, Netherlands**
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.

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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 easier 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.

Technical specifications

<table>
<thead>
<tr>
<th>Slices:</th>
<th>2 x 144</th>
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<tbody>
<tr>
<td>mA:</td>
<td>Up to 1,300 mA</td>
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<tr>
<td>Temporal resolution:</td>
<td>Down to 66 ms</td>
</tr>
<tr>
<td>kV:</td>
<td>90, 120, 140 kV</td>
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<tr>
<td>z-coverage:</td>
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<tr>
<td></td>
<td>120 x 0.2 mm (UHR)</td>
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<td>Spatial resolution:</td>
<td>0.11 mm (in-plane) in UHR mode</td>
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<tr>
<td>Power:</td>
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<tr>
<td>Max. scan speed:</td>
<td>Up to 737 mm/s (with Turbo Flash)</td>
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<tr>
<td>Table load:</td>
<td>Up to 307 kg</td>
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</tbody>
</table>

teamplay 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.
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