Multiply Your Potential

Things you can only do with a SOMATOM Definition Flash

www.siemens.com/generation-flash
Multiply Your Potential

Things you can only do with a SOMATOM Definition Flash

The SOMATOM® Definition Flash is in a league of its own. The generation of excited Flash users is continuously growing – not least because current Flash users are already purchasing their second, third, fourth, and even up to tenth system. The latest Dual Source Dual Energy CT scanner has the fastest volume acquisition speed and highest heart rate-independent temporal resolution on the market. Two revolutionary Stellar Detectors have made it even more powerful, making possible sharp images with a routine spatial resolution of 0.30 mm at impressively low radiation.

These are just a few of the innovative factors developed by Siemens that deliver an unmatched level of patient-centric care, even for your most challenging cases.

There are unique benefits this scanner has to offer to you and your patients. Read on to find out what things you can only do with a SOMATOM Definition Flash.
SOMATOM Definition Flash

Flash Speed. Lowest Dose.
Things you can only do with a SOMATOM Definition Flash
For unique patient and user benefits

- 01 Pediatric chest & body CT. Without sedation. 5
- 02 Chest CT. Without breath-hold. 9
- 03 Triple Rule-Out. Routinely below 2 mSv. 13
- 04 Diagnostic image quality. For patients up to 307 kg. 17
- 05 Trauma examinations. 1640 mm in under 5 seconds. 21
- 06 Neuro and coronary CTA. Just one scan. 25
- 07 Dose neutral Dual Energy. Always a second contrast. 29
- 08 Dose neutral Dual Energy. Saves an extra scan. 33
- 09 Routine sub-mSv heart. Even in patients up to 90 kg. 37
- 10 CT TAVI Planning. With only 40 mL contrast. 41
- 11 All heart rates. No exclusions. 45
- 12 Myocardial stress perfusion. Blood flow and volume. 49
- 13 Cardiac Dual Energy. At 75 ms temporal resolution. 53
The SOMATOM Definition Flash scan speed “[…] resulted in a scan time of a fraction of a second for the whole chest and body, and we could show that there is no longer a need for any means of sedation […].”* Flash Spiral scanning means examinations can be fully diagnostic, even when children are awake or agitated. This shortens preparation time, may eliminate repetition of scans, minimizes aftercare, and – most importantly – can eliminate risks of sedation and general anaesthesia in pediatric CT.

Pediatric chest & body CT. Without sedation.

**collimation:** 128 x 0.6 mm  
**spatial resolution:** 0.30 mm  
**scan time:** 0.34 s  
**scan length:** 99 mm  
**rotation time:** 0.28 s  
**heart rate-independent temp. resolution:** 75 ms  
**tube settings:** 120/120 kV, 5 mAs/rot  
**eff. dose:** 2.3 mSv

Courtesy of Waikato Hospital  
Hamilton, New Zealand
With SOMATOM Definition Flash spiral scanning, breath-hold and motion lose their significance, as an entire thorax can be scanned in only 0.6 seconds. “CT of the lung can be accomplished using the HPM [high-pitch mode] at a low radiation dose with a diagnostic image quality even without suspended respiration.”

Chest CT. Without breath-hold.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 1.3 s
scan length: 586 mm
rotation time: 0.28 s
heart rate-independent temp. resolution: 75 ms
tube settings: 100/100 kV, 362 mAs/rot
eff. dose: 3.7 mSv

Courtesy of Universitaets-Spital Zuerich
Zuerich, Switzerland
For Triple Rule-Out, the pulmonary and coronary arteries and the entire aorta can be imaged by the SOMATOM Definition Flash in a single, sub-second, gated scan with a speed of up to 458 mm/s in less than 1 s. “This high-pitch scan mode allows motion artifact free and accurate visualization of the thoracic vessels, and diagnostic image quality of the coronary arteries [...] with mean effective dose of 1.6 mSv.”* This means that SOMATOM Definition Flash not only saves an extra scan for coronary CTA, but also gives patients the freedom not to hold their breath.

Triple Rule-Out. Routinely below 2 mSv.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 0.6 s
scan length: 290 mm
rotation time: 0.28 s
heart rate-independent temp. resolution: 75 ms
tube settings: 100/100 kV, 370 mAs/rot
eff. dose: 1.9 mSv

Courtesy of University of Erlangen-Nuernberg
Erlangen, Germany
Imaging obese patients poses special challenges. “In larger patients diagnostic image quality can only be achieved reliably with the dual source XXL mode [...]”* The SOMATOM Definition Flash with the Flash Spiral offers 0.33 mm isotropic resolution and sufficient power in all scan speeds due to its unique Dual Source technology. The results are no longer a trade-off between speed and image quality. Thus, SOMATOM Definition Flash can provide diagnostic certainty in general, but also limits the difficulties that radiologists face in obese imaging.

Diagnostic image quality. For patients up to 307 kg.

collimation: 32 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 31 s
scan length: 480 mm
rotation time: 0.5 s
FoV: 780 mm
tube settings: 120/120 kV, 741 mAs
CTD\textsubscript{vol}: 60.11 mGy
patient weight: 181 kg

Courtesy of Spectrum Health
Grand Rapids, Michigan, USA
With a scan speed of 458 mm/s over the entire 50 cm Field of View, the SOMATOM Definition Flash can literally freeze motion for a sound and sustainable diagnosis even in critical situations. “The non-ECG-triggered version of the high-pitch spiral mode offers the potential to scan even large scan volumes in a very short time frame, for example, a thorax scan can be completed in less than 1 s”* and 1640 mm in less than 5 seconds. Hence the second tube and detector system of the Dual Source CT can extend the golden hour for the administration of the correct treatments to maximize the chances of survival in your patients.

Trauma examinations. 1640 mm in under 5 seconds.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 3 s
scan length: 986 mm
rotation time: 0.28 s
heart rate-independent temp. resolution: 75 ms
tube settings: 140 kV, 200 mAs/rot

Courtesy of General Hospital Vancouver
Vancouver, Canada
For stroke patients, secondary to cardiogenic embolism, early confirmation of cardioembolic infarction is important in order to initiate anticoagulation therapy for an adequate secondary prevention. With Flash Spiral scan speed, “[...] using a free-breathing technique seems to be a reliable method for examining the lung and thoracic vessels.”* So SOMATOM Definition Flash is the ideal gatekeeper with rapid, motion-artifact-free, whole body ED imaging. In one examination, doctors can rule out cardioembolic stroke, including coronary heart disease.

Neuro and coronary CTA. Just one scan.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 2.07 s
scan length: 571 mm
rotation time: 0.28 s
heart rate-independent temp. resolution: 75 ms
tube settings: 120/120 kV, 182 mAs/rot
eff. dose: 8 mSv

Courtesy of TACCC, Osaka University Hospital
Osaka, Japan
Siemens’ unique Dual Energy (DE) solutions provide additional information beyond morphology. These solutions are compatible with all renowned dose-reducing features, so that “Dual Energy CT is feasible without additional dose”* compared to a conventional 120 kV scan. “Thus, CT can be performed routinely in Dual Energy mode without additional dose or compromises in image quality.”*

In case of Pulmonary Embolism (PE), the Dual Source DE examination “[...] shows improved capability to detect peripheral PE.”** Thus, the SOMATOM Definition Flash clarifies which dot on the image actually is a true clot that should be treated with anticoagulation.

---


Dose neutral Dual Energy. Always a second contrast.

- **Collimation**: 64 x 0.6 mm
- **Spatial resolution**: 0.30 mm
- **Scan time**: 12 s
- **Scan length**: 287 mm
- **Rotation time**: 0.33 s
- **Tube settings**: 100/140 kV, 50/60 mAs
- **Eff. dose**: 2.6 mSv

Courtesy of Hospital Povisa
Vigo, Spain
Non-contrast-enhanced CT scans are commonly used and many of these examinations are followed by an additional contrast-enhanced scan. Dual Energy (DE) virtual non-contrast imaging with the SOMATOM Definition Flash “[…] can reduce radiation exposure by almost 50%.”* Siemens’ syngo DE Virtual Unenhanced enables the elimination of the unenhanced scan from all protocols. Requiring only one scan saves scan time and – with additional dose reduction potential, especially in pediatric CT, where every mGy counts.

Dose neutral Dual Energy. Saves an extra scan.

**collimation:** 32 x 0.6 mm  
**spatial resolution:** 0.30 mm  
**scan time:** 28 s  
**scan length:** 642 mm  
**rotation time:** 0.5 s  
**tube settings:** 100/140 kV, 81/68 mAs  
**eff. dose:** 6.2 mSv

Courtesy of Ludwig Maximilian University  
Grosshadern, Munich, Germany
Routine sub-mSv heart. Even in patients up to 90 kg.

For ruling out coronary stenosis in asymptomatic individuals, who are at low to intermediate risk of coronary heart disease, doctors are looking for dose sensitive examinations. With “[...] excellent image quality at a consistent dose below 1.0 mSv,”* the SOMATOM Definition Flash routinely delivers low-dose cardiac scanning. Even in patients up to 90 kg. It is even possible to achieve “ultra-low radiation exposure of < 0.1 mSv in patients with a body weight ≤ 75 kg”**. Thus, sub-mSv cardiac CT paves the way for early detection of coronary artery disease in appropriately selected patients.


Routine sub-mSv heart. Even in patients up to 90 kg.

- **collimation**: 128 x 0.6 mm
- **spatial resolution**: 0.30 mm
- **scan time**: 0.28 s
- **scan length**: 128 mm
- **rotation time**: 0.28 s
- **heart rate-independent temp. resolution**: 75 ms
- **tube settings**: 80/80 kV, 300 mAs/rot
- **eff. dose**: 0.4 mSv
- **patient weight**: 88 kg

Sir Run Run Shaw University Hong Kong
Hong Kong, China
Aortic stenosis is often complicated by renal insufficiency. For these patients, CT Trans Aortic Valve Implantation (TAVI) with little or no contrast is key. With the Flash Spiral of the SOMATOM Definition Flash, it is possible “[...] to assess the entire aorta and iliac arteries in TAVI candidates with a low volume [40 mL] of contrast agent [...].”* Flash Spiral scanning therefore offers a real benefit for patients with impaired renal function: it can reduce the risk of contrast-induced nephropathy with subsequent dialysis in these critically ill patients.

CT TAVI Planning. With only 40 mL contrast.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 1.5 s
scan length: 724 mm
rotation time: 0.28 s
heart rate-independent temp. resolution: 75 ms
tube settings: 100/100 kV, 258 mAs/rot
eff. dose: 1.7 mSv

Courtesy of Centre Cardio-Thoracique de Monaco
Monaco
Reliable and robust imaging of the global heart anatomy including the coronary artery tree still poses a challenge in patients with high and irregular heart rates or atrial fibrillation (AF). SOMATOM Definition Flash’s 0.28 s rotation speed, two X-ray tubes and detectors create a heart-rate-independent temporal resolution of 75 ms of the entire heart pathology. This extends “[...] the benefits of coronary CTA [CT Angiography] at a safe radiation dose to a patient [suffering from AF] traditionally considered an inappropriate candidate for coronary CTA.”* Thus, SOMATOM Definition Flash simply and reliably provides electrophysiologists with anatomical details to optimize their ablation procedures.

---

All heart rates. No exclusions.

collimation: 128 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 4 s
scan length: 96 mm
rotation time: 0.28 s
tube settings: 100 kV, 265 mAs/rot
eff. dose: 3.6 mSv
heart rate: 48–107 bpm

Courtesy of Sir Run Run Shaw University Hong Kong
Hong Kong, China
The SOMATOM Definition Flash provides dynamic myocardial stress perfusion imaging, while the hemodynamic relevance of stenosis can be evaluated by *syngo* Volume Perfusion CT (VPCT). “The ability to obtain accurate cardiac perfusion information, in addition to morphologic information from CT coronary angiography imaging, has significant implications [...].”* In a situation of intermediate coronary stenosis, the quantitative blood flow measurements allow immediate treatment decisions without the need for fractional flow reserve (FFR) with coronary catheterization. Already at the CT stage, doctors can therefore decide on the next steps: pharmacologic management or cardiac catheterization.


**collimation:** 32 x 1.2 mm  
**spatial resolution:** 0.30 mm  
**scan time:** 28 s  
**scan length:** 72 mm  
**rotation time:** 0.3 s  
**tube settings:** 100 kV, 370 mAs/rot  
**eff. dose:** 9.6 mSv

Courtesy of Radiologie LMU Grosshadern  
Munich, Germany
With SOMATOM Definition Flash Dual Source Dual Energy “ [...] imaging has a high sensitivity [...] and a good specificity [...] for the qualitative assessment of myocardial perfusion.”* Siemens’ syngo DE Heart Perfused Blood Volume (PBV) color-codes myocardial perfusion, so that both coronary artery morphology and myocardial perfusion can be assessed in a single CT scan. The SOMATOM Definition Flash offers the industry’s highest temporal resolution (75 ms). Thus, it presents cardiac pathology with valuable innovations for the test of myocardial viability with Dual Energy and for ruling out coronary artery, pericardial, congenital heart, or valve diseases.

Cardiac Dual Energy. At 75 ms temporal resolution.

collimation: 64 x 0.6 mm
spatial resolution: 0.30 mm
scan time: 10 s
scan length: 132 mm
rotation time: 0.28 s
tube settings: 100/140 kV, 164/140 mAs/rot
heart rate: 44–60 bpm

Courtesy of MUSC Medical Center
Charleston, USA
SOMATOM Definition Flash
Flash Speed. Lowest Dose.

Things you can only do with a SOMATOM Definition Flash

Unique to the SOMATOM Definition Flash are its Dual Source technology and the revolutionary Stellar Detectors. They make it possible to scan virtually any patient, both at very low radiation and contrast dose – no matter whether the patient has an unstable heart condition, cannot hold his breath, or is obese, very tall, poly-traumatized, or a moving child.

Its unmatched innovations include a 78 cm gantry bore, 307 kg capacity, 2 x 100 kW, 2 m scan range, whole-organ perfusion coverage, and 75 ms temporal resolution.
In the event that upgrades require FDA approval, Siemens cannot predict whether or when the FDA will issue its approval. Therefore, if regulatory clearance is obtained and is applicable to this package, it will be made available according to the terms of this offer.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this brochure are available through the Siemens sales organization worldwide. Availability and packaging may vary by country and is subject to change without prior notice. Some/All of the features and products described herein may not be available in the United States.

The information in this document contains general technical descriptions of specifications and options as well as standard and optional features which do not always have to be present in individual cases.

Siemens reserves the right to modify the design, packaging, specifications, and options described herein without prior notice. Please contact your local Siemens sales representative for the most current information.

Note: Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.