Datasheet

Multitom Rax

Move beyond traditional X-ray

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SIEMENS Healthineers

Technical specifications

Large color touchscreen
Offering access to key image parameters

Tube head
- High-speed positioning with robotic precision
- Up to 5 axes simultaneously

RAX arm
- High-speed, safe positioning with robotic precision
- Up to 5 axes simultaneously

Table
- Weight capacity: up to 240 kg (529 lbs)
- Lowest table height: 50 cm (19.7″)

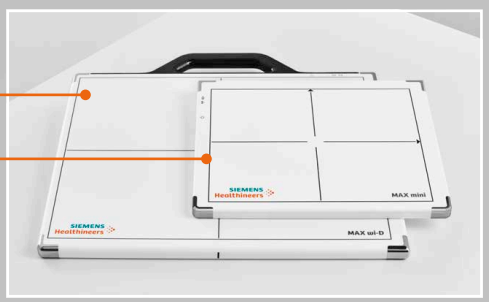
RAX detector
- Integrated, for static, dynamic[1], and 3D[1] imaging
- 43 cm x 43 cm (17″ x 17″)

Virtual U-arm
Moves detector and tube from a.p. to lateral within seconds

Manual micromovement
Fine-positioning in mm steps, by hand

MAX wi-D detector[1]
- Wireless
- Size: 35 cm x 43 cm (14″ x 17″)
- Weight: 3.3 kg (7.3 lbs)
- Thickness: 19 mm (0.7″)

MAX mini detector[1]
- Wireless
- Size: 24 cm x 30 cm (10″ x 12″)
- Weight: 1.6 kg (3.5 lbs)
- Thickness: 16 mm (0.6″)



[1] *Option*

***syngo* FLC**
Workstation for complete examination from registration to archiving

Wireless remote control
Automatic positioning of tube and detector

Table of contents

System specifications

System operation 5
X-ray tube stand 6
Detector stand 7
Patient table 8
X-ray generators 9
X-ray tube 9
Collimator 10
MAX detectors 10
Anti-scatter grid 10
RAX detector 11
MAX wi-D 12
MAX mini 13
Display 14
Display trolley 14
Display wall suspension (DWS) 14
syngo FLC hardware 14
CARE Program 15

Clinical workflow

Image acquisition/display/processing 16
RAXortho 17
True2scale Body Scan 18
Real3D 19
Fluoroscopy 20
Additional fluoroscopy options 21
Other software options 21
Patient data administration 22
Examination preparation 22
Data transfer and documentation 23
Smart Remote Service (SRS) 24
Emergency power supply 24
Cyber Security 24

Accessories

Standard 25
Options 25

Room planning

Installation data 26
Environmental conditions (operation) 26
Weight 26
System solutions 27
Dimensions 28

System specifications

System operation

Multitom Rax is a Twin Robotic X-ray system that thanks to its twin robotic arms for moving tube and detector offers unparalleled positioning flexibility in the X-ray suite. This allows for patient-centric workflows and weight-bearing imaging. Therefore the system is well-suited for MSK and trauma imaging. The system is easy to position around movement-impaired patients (on the table, in a wheelchair, or on a patient trolley/stretcher) even in challenging projections, while offering an ergonomic workflow.

Usability benefits

- Complete system operation with control of generator, tube, and imaging scanner from a single integrated console
- Convenient scanner positioning via connected remote control [1] and one wireless remote control
- Controlled via the selection of organ programs
- The X-ray tube position, generator parameters and collimator settings, including additional filtration as well as image processing parameters, are automatically set via the selected organ program
- Simultaneous movement in up to 10 axes with Twin FAST (Free Axis Simultaneous Travel)
  Automatic positioning of the X-ray tube and built-in detector into user-defined acquisition positions as preset in the organ program. By pressing the SmartMove button, the X-ray tube and detector stand automatically move to a preset position in accordance with the selected organ program
- The touch-sensitive wireless remote control with SmartTouch helps prevent unintentional system movements
- SmartMove buttons are located on the foot kick-switch and on the wireless remote control
- The automatic positioning can be configured in service mode to bypass any obstacles or fixtures in the room through ICP software (ICP = Intelligent Collision Protection)
- RAXtrack: Extensive tracking capabilities of tube and built-in - RAX detector. Tracking of SID, longitudinal, transversal and lateral tube and detector movements as well as tube rotation for patient table projections. Vertical and horizontal tube and detector movement tracking within the room.
- RAXalign: By the push of a button on the detector stand, the X-ray tube is automatically aligned and positioned to the angle and position of the built-in detector while maintaining the center and SID according to the grid used. By pressing the centering button on the tube stand, the detector stand is automatically aligned to the tube's central beam while maintaining the centering and SID according to the grid used
- Virtual U-Arm: Automatically moves detector and tube from a.p. to lateral within seconds without the need for patient repositioning

Moreover, Multitom Rax combines classic radiography with optional fluoroscopic capabilities, 3D imaging (Real3D) and full body slot scanning (True2scale Body Scan). A multitude of imaging techniques available in one room without patient transfer offers workflow and economic advantages.

[1] *Option*

System specifications

X-ray tube stand		
Horizontal travel range	Longitudinal with 4 m trolley:	350 cm (137.8“)
	Transversal:	290 cm (114.2“) (Extendable up to 710 cm (279.5“) [1])

Tube travel range, motorized support speeds	
Servo support for manual positioning of the tube in x-, y-axes, weight balanced manual positioning in z-axis	
Vertical travel range	180 cm (70.8“), manual or motorized
Speed in x- and y-axes	Up to max. 0.6 m/s
Speed in z-axis	Up to max. 0.3 m/s
Rotation range around the vertical axis	–119° to +217° manual –117° to +215° motorized, software stops at –90°; 0°; +90°
Rotation speed around the vertical axis	Max. 25°/s
Rotation range around the horizontal axis	–137° to +167° manual –135° to +165° motorized, software stops at –90°; 0°; +90°
Rotation speed around the horizontal axis	Max. 40°/s

MAXtouch

Multi-functional display with color touchscreen on the tube housing (10“)

The display adjusts to the orientation of the X-ray tube (portrait/landscape mode). Workflow is enhanced through direct manipulation of the examination parameters listed below

– Selection of the workplace: standing, table or free exposures with MAX wi-D with corresponding changes in the organ program parameters
– Adjustment of the sequence of registered organ programs
– Adjustment of kV, mAs and ms
– Film density correction and focal spot selection
– Adjustment of the detector sensitivity/dose
– Selection of IONTOMAT chambers for automatic exposure control
– SID (source-image distance) measurement with automatic calculation of image magnification factor
– Clear and large display of patient data, tube rotation and detector stand tilt angles

[1] *Option*

System specifications

Detector stand		
Horizontal travel range	Longitudinal with 4 m trolley:	350 cm (137.8“)
	Transversal:	290 cm (114.2“) (Extendable up to 710 cm (279.5“) [1])
X-ray absorption	≤ 0.45 mm Al (at 100 kV/3.7 mm Al HVL; EN/IEC 60601-1-3)	

RAX detector travel range, motorized support speeds	
Servo support for manual positioning of the detector in x-, y-axes, weight balanced manual positioning in z-axis	
Vertical travel range	180 cm (70.8“), manual or motorized
Speed in x- and y-axes	Up to max. 0.65 m/s
Speed in z-axis	Up to max. 0.3 m/s
Rotation range around the transversal/tilt axis	–125° to +18° motorized (manually controlled) –158° to +18° motorized (system controlled for 3D), software stops at –105°; –90°; 0°
Rotation speed around the transversal/tilt axis	Max. 25°/s
Rotation range around the horizontal axis	±135° motorized (manually controlled), software stops at –90°; 0°; +90°
Rotation speed around the horizontal axis	Max. 25°/s
Tube alignment	Center alignment: Central X-ray beam is centered to center of RAX detector Top alignment: Light field is offset to upper border of RAX detector

[1] *Option*

System specifications

Patient table [1]	
Tabletop width	75 cm (29.5“)
Tabletop length	219 cm (86.2“)
Table length	312 cm (122.8“)
Table height	50 cm (19.7“) to 92 cm (36.2“); total vertical travel range 42 cm (16.5“) (tabletop)
X-ray absorption	≤ 1 mm Al (at 100 kV/3.7 mm Al HVL; EN/IEC 60601-1-3)
Tabletop material	Carbon fiber
Max. patient weight	240 kg (529 lbs)
Max. table load incl. accessories	255 kg (562 lbs)
Max. patient coverage	Approx. 190 cm (74.8“) without patient repositioning
Auto tracking for table height adjustment	Yes, X-ray tube follows table height adjustment; source-image distance is maintained
Foot kick-switches control functions	Table up Table down Centering to detector Auto positioning
Footswitch [1]	X-ray acquisition X-ray fluoroscopy
Wireless footswitch [1]	X-ray acquisition X-ray fluoroscopy
Removable tabletop	

[1] *Option*

System specifications

X-ray generators

Generator	**POLYDOROS F-65**	**POLYDOROS F-80**[1]
Output	40 kV to 150 kV, 1 mA to 1000 mA 65 kW (acc. IEC 60601-2-7) 0.5 to 800 mAs	40 kV to 150 kV, 1 mA to 1000 mA 80 kW (acc. IEC 60601-2-7) 0.5 to 800 mAs
Exposure times	0.001 s to 5 s	
Frequency	100 kHz	
Fluoroscopy	40 kV to 110 kV, 4 mA to 84 mA, 2 ms to 10 ms, pulsed fluoroscopy	

X-ray tube

OPTITOP 150/40/80HC-100		
Max. exposure voltage (IEC 60613)	150 kV	
Focal spot nominal value (IEC 60336)	0.6	1.0
Nominal anode input power (IEC 60613:1989) (thermal anode reference power = 300 W)	40 kW	80 kW
Nominal anode input power (IEC 60613:1989) (thermal anode reference power = 0 W)	52 kW	103 kW
Radiographic anode input power (IEC 60613:2010)	47 kW	85 kW
Optical anode angle (IEC 60788)	12°	
Anode heat dissipation rate	120,000 J/min. (170,000 HU/min.)	
Anode heat storage capacity	580,000 J (820,000 HU)	
Max. heat storage capacity of the tube housing	1,800,000 J (2,530,000 HU)	
Anode drive	150/180 Hz (9,000 to 10,800 rpm)	
Leakage radiation (IEC 60601-1-3) (at 150 kV at 1 m distance)	≤ 0.8 mGy/h (450 W)	
Total filtration (IEC 60601-1-3)	≥ 2.5 mm Al/80 kV	
Weight	26 kg (57.3 lbs)	

[1] *Option*

System specifications

Collimator	
Inherent filtration	1 mm Al at 70 kV
Full-field light localizer	Very efficient 4 W high-power LED technology; high energy efficiency enabling low-noise design without external cooling system, lifetime of approx. 100,000 h, timer functionality, laser line light localizer (coverable)
Copper prefilter	Choice of no filter or 0.1 mm, 0.2 mm or 0.3 mm filter; motorized and positionable via organ programs
Rotation	±45° manually
Collimation control	Manual and motorized, preset via organ programs

MAX detectors [1]	
MAX wi-D and/or MAX mini are optionally available for free exposures	
MAXswap	MAXswap is the right way to share, allowing you to swap the MAX wi-D and MAX mini between multiple MAX systems so you always have the right detector when and where you need it
MAXcharge [1]	Charging in the wall holder

Anti-scatter grid	
Type	Transparent grid, stationary, focused
Grid	Pb 15/80, f_0 = 115 cm (45.3“); Pb with paper interspacing
Grids [1]	Pb 13/92, f_0 = 115 cm (45.3“); Pb with aluminum interspacing horizontal Pb 15/80, f_0 = 180 cm (70.9“); Pb with paper interspacing Pb 15/80, f_0 = 300 cm (118.1“); Pb with paper interspacing Universal grid, Pb 13/92, f_0 = 140 cm (55.1“); scanrange from f = 111 cm (43,7“) to f = 190 cm (74,8“); Pb with aluminum interspacing
Clip-on grids [1] for MAX wi-D	Grid, Pb 5/85, f_0 = 115 cm (45.3“); Pb with aluminum interspacing Grid, Pb 15/80, f_0 = 115 cm (45.3“); Pb with paper interspacing
Clip-on grid [1] for MAX mini	Grid, Pb 5/85, f_0 = 115 cm (45.3“); Pb with aluminum interspacing

[1] *Option*

System specifications

RAX detector				
High-performance fiber-optic connection to digital imaging system				
Five selectable solid-state measurement fields				
Measurement fields are adjusted according to collimation depending on the selected zoom format				

Input fields (active area)	Full format 42.0 cm x 42.5 cm 16.5" x 16.7"	Zoom 1 [1] 30 cm x 30 cm 11.8" x 11.8"	Zoom 2 [1] 22 cm x 22 cm 8.7" x 8.7"	Zoom 3 [1] 15 cm x 15 cm 5.9" x 5.9"
Material	Amorphous silicon (a-Si) flat detector with Cesium iodide (CsI) scintillator			
Pixel size	148 µm			
Spatial resolution (Nyquist frequency)	3.4 lp/mm			
Matrix	Up to 2840 x 2874 pixels			
Digitization depth	16 bits			
DQE in %; 2 µGy (RQA5) (IEC 62220)	67 % at 0.05 lp/mm 56% at 0.5 lp/mm 50 % at 1.0 lp/mm 45% at 1.5 lp/mm 42 % at 2.0 lp/mm 35% at 2.5 lp/mm 27 % at 3.0 lp/mm 20 % at Nyquist			
DQE in %; 200 nGy (RQA5) (IEC 62220)	66% at 0.05 lp/mm 56% at 0.5 lp/mm 49% at 1.0 lp/mm 45% at 1.5 lp/mm 40% at 2.0 lp/mm 34% at 2.5 lp/mm 25% at 3.0 lp/mm 20% at Nyquist			
DQE in %; 20 nGy (RQA5) (IEC 62220)	63% at 0.05 lp/mm 52% at 0.5 lp/mm 44% at 1.0 lp/mm 38% at 1.5 lp/mm 31% at 2.0 lp/mm 23% at 2.5 lp/mm 16% at 3.0 lp/mm 12% at Nyquist			
MTF in % (RQA5) (IEC 62220)	83% at 0.5 lp/mm 67% at 1.0 lp/mm 53% at 1.5 lp/mm 42% at 2.0 lp/mm 32% at 2.5 lp/mm 25% at 3.0 lp/mm 21% at Nyquist			

[1] *Fluoroscopy option*

System specifications

MAX wi-D [1]	
Detector technology	Cesium iodide scintillator coupled to TFT matrix with amorphous silicon technology
Dimensions (active area)	34.8 cm x 42.4 cm (13.7" x 16.7")
Active detector matrix	2350 x 2866
Dimensions with detector housing	44.1 cm x 46.1 cm x 1.9 cm (17.3" x 18.1" x 0.75")
Pixel size	148 µm
Semiconductor material	Amorphous silicon (a-Si)
Scintillator	Cesium iodide (CsI)
Digitization depth	16 bits
DQE in %; 2 µGy (RQA5) (IEC 62220)	70% at 0.05 lp/mm 60% at 0.5 lp/mm 51% at 1.0 lp/mm 47% at 1.5 lp/mm 42% at 2.0 lp/mm 35% at 2.5 lp/mm 29% at 3.0 lp/mm 19% at Nyquist
MTF in % (RQA5) (IEC 62220)	81% at 0.5 lp/mm 63% at 1.0 lp/mm 47% at 1.5 lp/mm 35% at 2.0 lp/mm 26% at 2.5 lp/mm 19% at 3.0 lp/mm 15% at Nyquist
Data transmission	WLAN [2] < 3 s preview; < 7.5 s full image
Thickness	19 mm (0.75")
Weight	3.3 kg (7.3 lbs)
Max. load capacity	300 kg (661 lbs) with patient recumbent 100 kg (220 lbs) with patient standing
Battery	Lithium-ion, rechargeable, exchangeable
Charging time	3 h in battery charger
Battery operation time	Up to 1,050 images Up to 6.5 hours during regular utilization Up to 11.7 hours in standby mode
Charging location	Battery charger [1], Wall charger with MAXcharge [1]
WLAN Standard	IEEE 802.11n, 2 x 2 mimo
If there is a WLAN or other wireless equipment in your working environment, please consult your Siemens Healthineers representative for optimal set-up of the wireless connection	
IEC Regulations	Electromagnetic compatibility: compliance with IEC 60601-1-2 ed. 4 This detector does not affect pacemakers that fulfill DIN EN 45502-2-1, Section 27
IP classification	IP43

[1] Option; [2] The preview/full image transmission time depends on the quality of the WiFi link and the selected processing parameters

System specifications

MAX mini [1]	
Detector technology	Cesium iodide scintillator coupled to TFT matrix with amorphous silicon technology
Dimensions (active area)	22.5 cm 28.4 cm (8.9" x 11.2")
Active detector matrix	1520 x 1920
Dimensions with detector housing	26.9 cm x 32.9 cm x 1.6 cm (10.6" x 13" x 0.63")
Pixel size	148 µm
Semiconductor material	Amorphous silicon (a-Si)
Scintillator	Cesium iodide (CsI)
Digitization depth	16 bits
DQE in %; 2 µGy (RQA5) (IEC 62220)	70% at 0.05 lp/mm 60% at 0.5 lp/mm 51% at 1.0 lp/mm 47% at 1.5 lp/mm 42% at 2.0 lp/mm 35% at 2.5 lp/mm 29% at 3.0 lp/mm 19% at Nyquist
MTF in % (RQA5) (IEC 62220)	81% at 0.5 lp/mm 63% at 1.0 lp/mm 47% at 1.5 lp/mm 35% at 2.0 lp/mm 26% at 2.5 lp/mm 19% at 3.0 lp/mm 15% at Nyquist
Data transmission	WLAN [2] < 2.5 s preview; < 5.5 s full image
Thickness	16 mm (0.63")
Weight	1.6 kg (3.5 lbs)
Max. load capacity	300 kg (661 lbs) with patient recumbent 100 kg (220 lbs) with patient standing
Battery	Lithium-ion, rechargeable, exchangeable
Charging time	3 h in battery charger
Battery operation time	Up to 1,050 images Up to 6.5 hours during regular utilization Up to 11.7 hours in standby mode
Charging location	Battery charger [1]
WLAN Standard	IEEE 802.11n, 2 x 2 mimo
If there is a WLAN or other wireless equipment in your working environment, please consult your Siemens Healthineers representative for optimal set-up of the wireless connection	
IEC Regulations	Electromagnetic compatibility: compliance with IEC 60601-1-2 ed. 4 This detector does not affect pacemakers that fulfill DIN EN 45502-2-1, Section 27
IP classification	IP43

[1] Option; [2] The preview/full image transmission time depends on the quality of the WiFi link and the selected processing parameters

System specifications

Display	
19" TFT high-contrast color display for flicker-free, distortion-free live image and reference image display for X-ray diagnostics	
Light weight, high luminance and contrast values	
Display area (W x H)	37.6 cm x 30.1 cm (14.8" x 11.8")
Screen size	19" (48 cm)
Pixel number	1280 x 1024
Brightness	700 cd/m²
Brightness for typical usage	400 cd/m²
Surface	Anti-glare
Typical contrast ratio	1000:1
Power consumption	< 45 W; in power safe mode: < 2 W
Weight	4.3 kg (9.48 lbs)
Dimensions (W x H x D)	40.5 cm x 33.4 cm x 6.1 cm (15.9" x 13.1" x 2.4")
Horizontal viewing area	178° (H and V)

Display trolley [1]	
Suitable for one or two monitors with a diagonal screen size of 19" (48 cm) each	
Two radiation-ON indicators	
Display tilt range	+15°/–10°
Weight with two monitors	Approx. 62 kg (136.7 lbs)

Display wall suspension (DWS) [1]	
Display Wall Suspension for flexible positioning of up to two flat displays for live image display and optional reference image display in the examination room to save space on the floor. The display suspension system includes a radiation indicator, is wall-mounted, swiveling rotatable and height-adjustable.	
Height adjustment	1175 mm
Swiveling radius	1970 mm
Screen diagonal	19" (48 cm)
Resolution	1280 x 1024 pixels
Maximum brightness (typ.)	≤ 700 cd/m²

syngo FLC hardware	
Computer	Intel Core i3 microprocessor, min. 3.7 GHz, 8 GB RAM, S-ATA drive, USB 3.0 and interface cards for the detector/X-ray system
Operating system	Windows 10 Enterprise LTSB 2016 (64 Bit)
Acquisition memory on hard disk	25,000 RAD images (instead of 1 RAD image 8 DFR images can be stored [1])

[1] *Fluoroscopy option*

System specifications

CARE Program (Combined Applications to Reduce Exposure)	
CAREVISION[1]	Pulsed fluoroscopy with selectable pulse frequencies
CAREMATIC	Automatic X-ray control system for fully automatic calculation and optimization of the exposure data based on fluoroscopic values
CAREMAX	An integrated measurement chamber in the collimator housing measures the dose area product in µGym² (or mGycm²) and/or standardized patient entrance dose, which are displayed on the generator display and imaging system display in accordance with IEC (CAREWATCH [1]) The display can be configured as follows: During fluoroscopy: Skin dose During fluoroscopy pause: A choice of cumulative skin dose, dose area product or percentage of a defined dose limit value
CAREFILTER	Adaptive Cu pre-filtration at 0.1, 0.2 and 0.3 mm Cu to reduce patient dose Filter selection via the organ program and automatic monitoring of patient absorption (auto filter)
CAREPROFILE	Radiation-free collimation and positioning via graphic display on last image hold (LIH)
CAREPOSITION	Radiation-free positioning via graphic display of the field-of-view on last image hold (LIH) (only together with CAREPROFILE)

[1] *Part of Fluoroscopy option*

Clinical workflow

Image acquisition/display/processing	
Acquisition and preprocessing	Selection of generator parameters, setting of parameters for image preprocessing (amplification, harmonization, edge enhancement and LUT) or DiamondView MAX Display of image markers
Image display	Fit to window view of full image
Image processing	Vertical and horizontal reversal, zoom, electronic magnifying glass, windowing for contrast/brightness, black/white image inversion, harmonization (DDO), edge enhancement filter, electronic shutter
Graphic functions	Quantification with angle/distance measurement
Text functions	Marking, annotation, image comments, R/L markers
DiamondView MAX	DiamondView MAX is our unique image processing engine that comes with all MAX systems. Even in gridless imaging during free examinations, it delivers exceptionally sharp images with enhanced contrast, a high level of detail visibility, and optimized noise reduction – at low dose for all adult and pediatric patients.
Gridless acquisition	Gridless acquisition of free exposures (esp. Thorax) using DiamondView MAX functionalities for superior contrast and easier handling

Clinical workflow

RAXortho [1]	
SmartOrtho for full spine or long leg imaging	Acquires up to four consecutive leg or spine exposures (in a single automatic aquisition process) Multipurpose stand/Ortho stand required Tilting technique on the patient table: max. ROI field coverage of up to 143 cm x 43 cm with only 5 cm overlap Tilting technique with patient standing: max. ROI field coverage of up to 154 cm x 43 cm with only 5 cm overlap Typical acquisition time for 3 images: patient table 16 s; patient standing 17 s Composing of images directly on the *syngo* FLC imaging system or on a separate workstation [1]
Cross-table SmartOrtho lateral	Acquires up to four consecutive spine exposures (in a single automatic acquistion process) of patient in supine position for lateral spine images Max. ROI field coverage of up to 143 cm x 43 cm
Transversal SmartOrtho standing	Acquires up to four consecutive exposures (in a single automatic acquistion process) of standing patient for orthopedic examinations along the transversal body axis Multipurpose stand/Ortho stand required Max. ROI field coverage of up to 143 cm x 43 cm
Transversal SmartOrtho lying	Acquires up to three consecutive exposures (in a single automatic acquistion process) of patient lying on the table Max. ROI field coverage of up to 100 cm x 43 cm (limited by table width)

[1] *Option*

Clinical workflow

True2scale Body Scan [1]

For a True2scale Body Scan, tube and detector are moved continuously along linear trajectories (a.p. and/or lateral view) while the X-ray beam is formed to a narrow slot.
The images acquired in this way can be used for the composition of a geometrically accurate (in scanning direction) 2-D representation of the scanned object on a dedicated reconstruction workstation.

Max. longitudinal scan range	190 cm in supine position 170 cm in weight-bearing position
Max. image width	34 cm in a.p. projection 28 cm in lateral projection
Slot size	5 - 6 cm
Pixel size	0.25 mm
Reconstruction options	choose between different flavors
Image resolution	up to 1.4 lp/mm @ 10% MTF
Scan speed	Speed 1: 8 cm/s Speed 2: 14 cm/s Speed 3: 27 cm/s
Scan time	single plane 8 - 18 s biplane 22 - 36 s [3]
Mandatory hardware with True2scale Body Scan:	– *syngo*.via View&GO [2] workstation with True2scale reprocessing software – RAX stand incl. hand grip and head support for standing examinations

[1] *Option*
[2] *Described in a separate datasheet*
[3] *Exceeding the BMI limit of 40 kg/m² requires separate anterior-posterior and lateral scans.*

Clinical workflow

Real3D [1]

For a Real3D scan, tube and detector are moved continuously along predefined trajectories.
The images acquired in this way can be used for the composition of a volumetric representation of the acquired object on a dedicated reconstruction workstation.

Available software options within Real3D:	– Real3D extremities lying (hand, elbow, foot, ankle, knee) – Real3D Hi-Res upper extremities (hand, elbow) – Real3D weight-bearing (foot, ankle, knee, lumbar spine[3])
Dose reporting	dose values given as DAP, DLP, $CTDI_{vol16}$ and $CTDI_{vol32}$
Real3D reconstruction options	
Real3D image impressions	Choose between four different MDCT-like image impressions for the generated Real3D slices: smooth, medium, sharp, and very sharp (Hi-Res only)
Reconstruction with optional MAR	Metal Artifact Reduction with intelligent interpolation and local frequency split – Reduces streak artifacts – Reduces hyper- and hypodense artifacts caused by metallic implants.
Matrix size	up to 732 x 732 x 732 voxels
Voxel size	0.2 mm (Hi-Res) to 0.5 mm isotropic
Volume size	∅ 23 cm up to 26 cm for Real3D ∅ 15 cm for Real3D Hi-Res
Scan time	12 - 16 s
Mandatory hardware with Real3D:	*syngo*.via View&GO[2] workstation with 3D reprocessing software Real3D accessories: – RAX stand for standing examinations – handgrip for RAX stand – leg support for RAX stand – arm board for tabletop – tabletop extension

[1] Option
[2] Described in a separate datasheet
[3] Images of the trunk up to a BMI of 30 kg/m²

Clinical workflow

Fluoroscopy [1]	
Fluoroscopy control console	Single, intuitive remote console for control of movements from the control room Integrated touch user interface for generator and imaging system controls and display of current system state Single button control for automatic movement to positions as defined in the organ programs Touch-sensitive joysticks to prevent unintentional system movements Additional, trolley-mounted remote control console in the examination room [1]
Dynamic imaging modes	Digital Pulsed Fluoroscopy (CAREVISION): 30, 15, 10, 7.5 or 3 p/s, 12-bit matrix (30 p/s at Zoom 0 and 2) DFR series and DSA series: 1k x 1k or 1420 x 1436/12-bit matrix: 8, 4, 2, 1, 0.5 f/s
RAXorbit	Tilting along and rotation around the patient with joystick for lying and standing patient
RAXorbit lying	Either tilting of ±45° or rotation around the table from: –15° to +120°
RAXorbit standing	Tilting of ±45° and rotation around the patient from: Up to –17° to +125° (along the table) Up to –107° to +34° (orthogonal to the table)
Reference image display	Storage and display of reference images on the second monitor
Stenosis quantification	Quantification program for geometric and densitometric values

[1] *Option*

Clinical workflow

Additional fluoroscopy options	
FluoroLoop [1]	Storage and display of dynamic fluoroscopy sequences Maximum storage duration depends on the frame rate, e.g., 30 p/s approx. 60 s, 15 p/s approx. 60 s, 10 p/s approx. 90 s, 7.5 p/s approx. 120 s, and 3 p/s approx. 300 s
DSA functionality [1]	Online DSA with pixel shift, remasking, roadmap, peak opacification for iodine contrast (MaxOp) and CO_2 contrast (MinOp), display of anatomical background (landmark) from 0 % to 100 %, summation of mask and fill images for contrast enhancement
Injector interface [1]	For connection of a contrast media injector and injection synchronization with radiation release
Wireless foot switch [1]	Wireless foot switch for radiation release, control of radiation functions and storing. Only available for examination room
Enhanced CARE package [1]	The following functionalities for low dose results can be found in this package: Snapshot mode Enables instantaneous snapshot image during fluoro at lower dose than DFR/DR images Proactive FluoroLoop Possibility to activate automatic storage of upcoming fluoro sequences instead of acquiring DFR/DR images/sequences to avoid additional dose Histogram-based dose regulation Automatic dose regulation for fast and easy patient positioning Digital zoom Live image zoom without dose increase

Other software options	
Virtual workstation [2]	Virtualized environment (Microsoft Hyper V – Windows 10) Allows installation of customer 3rd party software, e.g. RIS or HIS client Switch between system screen and virtual workstation with a single interaction
MultiModalityViewing [2]	Import and viewing of images/studies from other imaging modalities such as MR and CT prior or post examination

[1] *These options require the Fluoroscopy option*
[2] *Option*

Clinical workflow

Patient data administration	
Patient registration	Retrieval of patient list and examination data from the hospital/radiology information system (HIS/RIS) Emergency patient registration Patient, study and image data administration Configuration functions Cyber security [1]

Examination preparation	
Exam manager	Selection of exams; adding, deleting or replacing organ programs Automatic acquisition mode/workstation selection
Organ programs	The following parameters can be configured for each organ program allowing a one-click examination set up: X-ray parameters: Acquisition mode, exposure technique, tube voltage, dose, focus, tube load, etc. Image processing parameters: Window values, positive/negative image display, DiamondView MAX, rotation, mirroring, cropping, etc.

[1] *For more details refer to page 24*

Clinical workflow

Data transfer and documentation	
DICOM Network interfaces	
DICOM Send/StC	Transmission of images to a DICOM network for viewing and archiving Confirmation from the image archive (StC = Storage Commitment)
DICOM Print	Printing of images to a DICOM laser camera via virtual film sheet
DICOM Query/Retrieve [1]	Retrieval of images from a picture archiving and communication system (PACS)
DICOM Encryption [1]	Sending encrypted images to DICOM nodes which can receive encrypted images
DICOM Worklist/MPPS [1]	Get Worklist function for importing patient data from a data management system (RIS/HIS). XRF, CR and DX worklist entries supported, configurable Modality Performed Procedure Step (MPPS) function for sending examination statistics and dose information to a data management system
DICOM Dose Structured Report	Sending of dose values for each study to an archiving system
DICOM Multimodality Viewing [1]	Import and viewing of images/studies from other imaging modalities such as MR and CT before of after the examination
Documentation	
Image data management	Transmission of images to a network Automatic and selective printing with virtual film sheet Available layout formats for printing: 2 x 1; 3 x 1; 3 x 2; 1 x 1; 1 x 2; 1 x 3; 2 x 2; 2 x 3 Up to 3 network nodes at the same time and one laser camera configurable Export of image data (12 bit) to CD/DVD recorder in DICOM or TIFF format Export and import to USB device in DICOM or TIFF format USB hard disk available as optional accessory
Recycle bin	This feature can be enabled or disabled Stores rejected and deleted images that are not archived/printed in a separate folder
Clinical Assurance Program (CAP)	Provides statistics of rejected images
Exposure index (EXI) monitoring	Provides minimum and maximum EXI value for export
Printer connection [1]	For paper printing to a Level 2 PostScript printer

[1] *Option*

Clinical workflow

Smart Remote Service (SRS) [1, 2]
Connect Multitom Rax to the service experts in our Customer Care Center
Allows remote diagnosis of software and hardware
Allows remote system configuration, e.g. adding a DICOM node
Enables delivery of remote software updates
Remote Assist (based on TeamViewer®) enables screen sharing between you and our application specialists for real-time support

Emergency power supply [1]	
Provides emergency power to the imaging system (50/60 Hz) until line voltage is restored	
In case of power failures lasting more than 90 seconds the imaging system will shut down automatically	
Nominal power	850 VA/600 W

Cyber Security	
Secure product lifecycle	Threat and Risk Analysis, Secure Architecture & Design, Secure Configuration and Hardening, Secure Coding & Testing with Vulnerability Scanning, Penetration Testing
Whitelisting	Malware protection based on Microsoft Device Guard
Hard disk encryption	Encryption of patient data on internal hard disk with Bitlocker (on customer request)
IPv6	It is possible to configure IP adressess in IPv4 or IPv6 format
High frequency hotfix delivery	Providing hotfixes for 3rd party components (e.g. Microsoft) every 90 days [2]
Advanced security package [1]	Advanced user management: Active directory integration, Individual password management and user authorization Audit trail management: Detailed tracking of user and system actions and centralized automated logging DICOM encryption
Hardware security package [1]	Lock to generator cabinet Hardware port covers for *syngo* FLC

[1] *Option*
[2] *Special requisites are necessary at customer site (e.g. Smart Remote Service Connection)*

Accessories

Standard
CD/DVD recorder
Hand grips for patient table
Positioning support for lateral chest examinations

Options
Accessory filters (including holder) for collimator
Baby carrier holder for Ortho stand
Bidirectional intercom system with optional foot switch
Clip-on grids for MAX wi-D
Clip-on grid for MAX mini
Compensation filter
Compression belt (suitable for table)
Detector cover
External hard disk for USB export
Mobile detector holder for MAX wi-D and MAX mini
Ortho stand
Patient positioning mattress
RAX stand for advanced applications [2]
RAX stand accessories: handgrip [1], leg support, steps [2]
Tabletop acessories: armboard and tabletop extension
Table paper holder
UPS for imaging system
Wall holder for grid
Wall charger for MAX wi-D
Wireless foot switch

[1] *Max. load 50 kg*
[2] *Max. patient weight 320 kg*

Room planning

Installation data	
The entire system is powered via a single line voltage connection	
Power connection	3-phase, 380 V, 400 V (440/480 V with additional transformer for the generator) ±10 % at 50 or 60 Hz
Power input	Max. 126 kVA, 50 A fuse

Environmental conditions (operation)	
Examination room	
Temperature range	+10 °C to +35 °C
Relative humidity	20 % to 75 %
Barometric pressure	700 hPa to 1060 hPa
Imaging system	
Temperature range	+10 °C to +35 °C
Relative humidity	20 % to 75 %
Barometric pressure	700 hPa to 1060 hPa

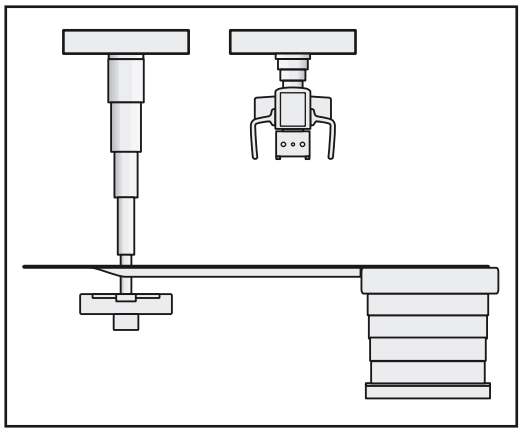
Weight	
X-ray tube stand	Approx. 365 kg (804.6 lbs)
Detector stand	Approx. 355 kg (782.6 lbs)
Imaging station	Approx. 50 kg (110.2 lbs)
Generator cabinet	Approx. 428 kg (943.5 lbs)
Patient table	Approx. 335 kg (738.5 lbs)
Fluoroscop control console [1]	Approx. 4.5 kg (9.9 lbs)
Trolley-mounted operating console [1]	Approx. 40 kg (88.2 lbs)

[1] *Option*

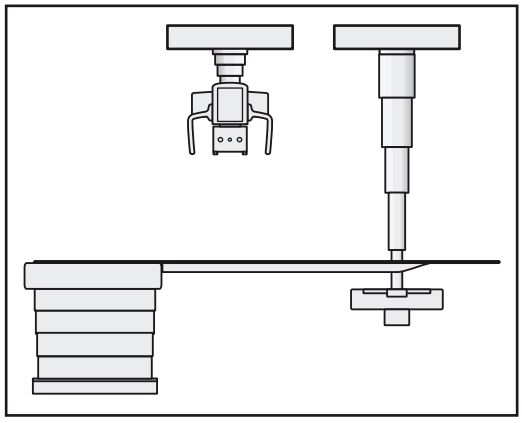
Room planning

System solutions

Radiography

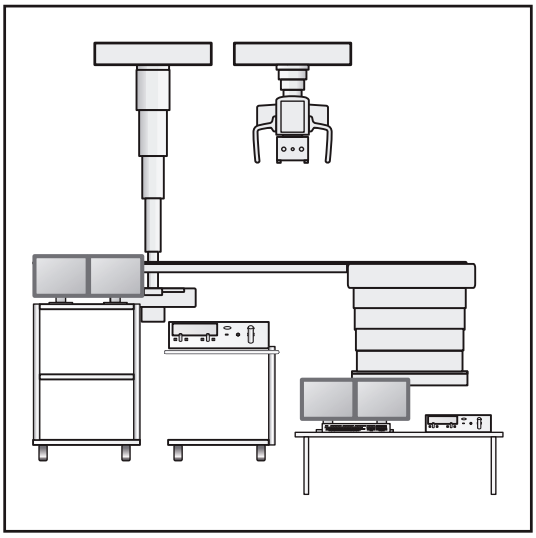


Variant for radiography applications with 2 ceiling stands and height-adjustable patient table.
Patient orientation: left.

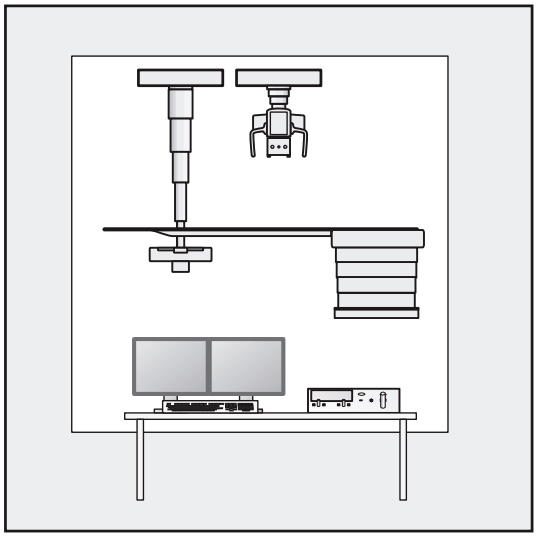


Variant for radiography applications with 2 ceiling stands and height-adjustable patient table.
Patient orientation: right (mirrored installation).

Radiography and Fluoroscopy



Variant with fluoroscopy option with remote control console in control room (live monitor and optional reference monitor).
Optionally with control console on trolley for use inside the examination room.
Trolley for live monitor and optional reference monitor.

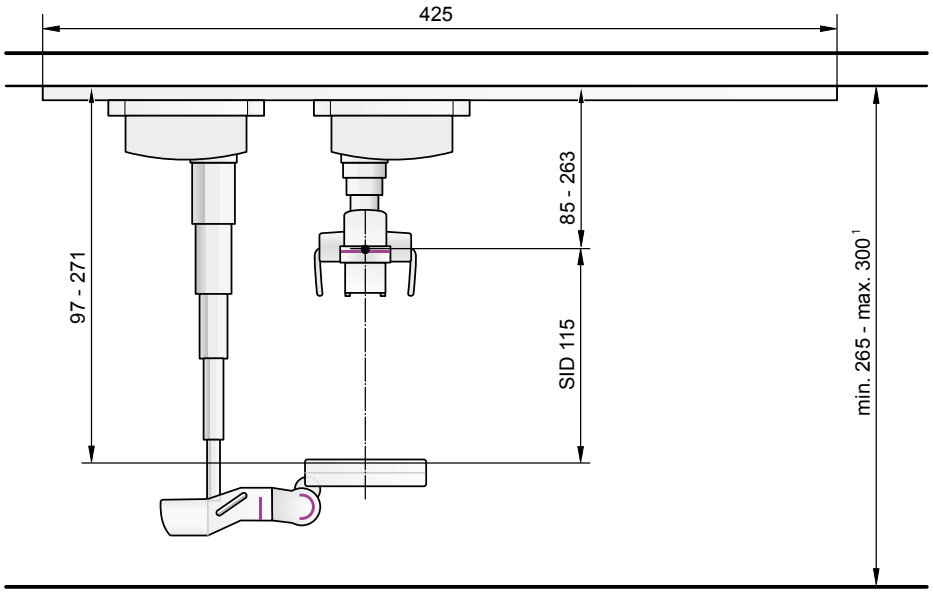


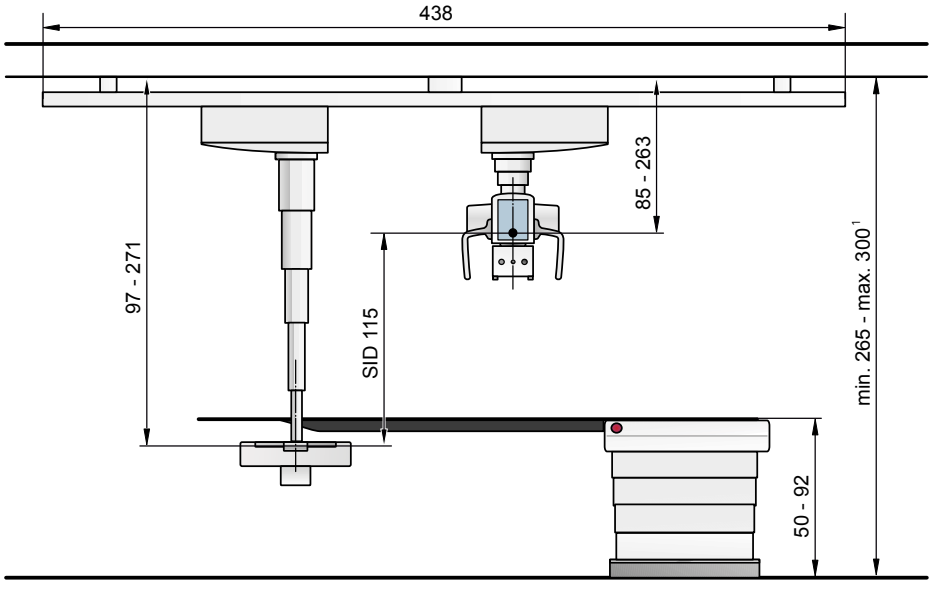
Variant with fluoroscopy option with remote control console in control room (live monitor and optional reference monitor).

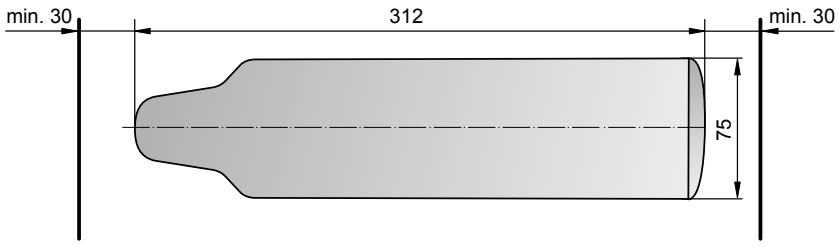
All variants shown above may also be configured with the addition of portable detectors (that is Max mini and/or Max wi-D), as well as without a table.

Room planning

Dimensions in cm







[1] *Minimum room height for Real3D lying is 280 cm and for True2scale is 290 cm*

Notes

Multitom Rax VF11 is not yet available in all countries. Due to regulatory reasons, its future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

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VF11

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