


Technical Description

Technical Data

All technical data represent typical values unless specific tolerances are stated.

System

Power connection	The entire system is connected to the power supply via the generator
Nominal voltage:	3/N/PE, 400 V ¹ ± 10%
Nominal frequency:	50/60 Hz ± 1 Hz
Nominal rating:	Internal fuse 3 x 50 A slow-blow
Ambient conditions	
Operation:	+10°C to +35°C 20% to 75%, relative humidity, non-condensing 700 hPa to 1060 hPa
Storage and transport:	-20°C to +70°C 10% to 95%, relative humidity, non-condensing 500 hPa to 1060 hPa
Radio interference suppression/EMC	EN 60 601-1-2
Protection type	Protection class I, according to IEC 601 - 1
Degree of protection 	Type B
Floor space required	max. 3.80 m x 2.32 m without restrictions to movement, traffic area and safety distances min. 2.80 m x 2.32 m with restrictions to movement (max. SID 1.15 m at + 90°), without traffic area and safety distances.
Weight	Unit approx. 1300 kg; system remote control console approx. 12 kg; generator cabinet approx. 290 kg; FLUOROSPOT Compact approx. 80 kg; mobile tableside control console approx. 40 kg;
Room height	Without ceiling-mounted support at least 3.20 m; with ceiling-mounted support: 3.30 m (without restrictions of the system movement), from 2.50 m to 3.20 m with automatic movement restrictions by collision computer

¹ Pretransformer required for 440/480 V

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Unit

Table and patient tabletop

Table tilt:	Motor driven, + 90° to - 17°; Tilting speed approx. 4.5°/s; min. tilting time 90° to 0°: 21 s (incl. soft start and braking); automatic stop in horizontal position (0°) can be switched on/off
Table height:	In horizontal position 89 cm with I.I. 33 or I.I. 40
Tabletop:	Dimensions: outside 210 cm x 80 cm, radiotransparent 193 cm x 55 cm attenuation equivalent: ≤0.6 mm Al at 100kV 2.7mm Al HVL ≤0.65 mm Al at 100kV 3.7mm Al HVL
Patient weight:	Maximum of 200 kg with the following restrictions: <ul style="list-style-type: none">– 181 kg to 200 kg: patient lying centrally on the horizontal, not projecting tabletop; no table longitudinal and transverse movements permitted;– 151 kg to 180 kg: patient lying centrally on the tabletop, restriction of the movement speeds max. 20% and of the table longitudinal movement +/-40 cm and transverse movement to the front 7.5 cm; Trendelenburg position max. 45° with patient secured with shoulder supports and foot restraints.– 0 kg to 150 kg: no restrictions of the table longitudinal and transverse movement. In addition 50 kg for cardiac massage (CPR) in the table mid-position. <p>The permitted nominal patient weights were defined with 4 times the test load according to IEC 601.</p>
Longitudinal travel:	160 cm motor-driven, 80 cm each to the head and foot end; speed 6 cm/s (50 Hz) or 7.2 cm/s (60 Hz)
Transverse travel:	35 cm motor-driven, 17.5 cm each to the left and right; speed 5 cm/s
Tube assembly stand:	
SID:	115 cm, 150 cm, can be set by motor drive; adjustment at approx. 5 cm/s
Oblique projection:	Max. ± 40° (SID 115 cm) or ± 35° (SID 150 cm), at max. 8°/s; fulcrum height adjustable by motor drive 10 to 300 mm above tabletop (= parallax correction of the object); automatic parallax compensation between cassette and image intensifier input screen in the central ray (only with cassette spotfilm device)
Tube assembly swivel:	Manually in the range of + 90° to - 90° with stops every 10° and -90° to -180° with stops every 30°

Cassette spotfilm device (optional)

Cassettes:	Front loading for cassettes standardized according to IEC, ANSI and DIN (metal or plastic) of the formats 18 cm x 24 cm (8" x 10") up to 35 cm x 43 cm (14" x 17"). For permissible sizes and segmentations refer to cassette program; automatic loading, centering and format sensing
Automatic format collimation:	Can be selected separately according to format height/width for cassette spot-filming; automatic formatting for Bucky exposures, object-related collimation possible after 1 to 2 seconds
Film segmentation:	Max. 4 on 1; secondary width diaphragms
Inward movement time:	Park to exposure position max. 1s (24 cm x 30 cm cassette, without lead inlay)
Transition time:	Fluoroscopy - radiographt 1s ± 15% (without filter positioning/grid movement); 1.35 s ± 15% with oscillating grid
Series technique:	With multiple segmentation and DFR
Tabletop-film distance:	7.8 cm (minimum)
Tabletop-I.I. distance:	11.8 cm (minimum)

I.I. image receptor/cassette spotfilm device (optional)

Scattered radiation grid:	Stationary 17:1, 70 lines/cm, $f_0 = 125$ cm; Oscillation for CR cassettes configurable by Uptime Service; Motorized grid movement in or out of beam path in 4 s
Spotfilm device travel:	Max. 105 cm (remote-controlled), fine-adjustable up to max. 8 cm/s (routine) or 16 cm/s (Periscanning); PERISTEPPING option: stepping with max. 5 steps of 18 cm each (I.I. 40)
Central ray height above the floor:	77 cm to 182 cm with table tilted up (+ 90°);
Tabletop-image intensifier screen distance:	7.8 cm (minimum, I.I. image receptor only)
Distance from central beam to end of table:	minimum 42 cm (head end)
Attenuation of the useful radiation	Attenuation factor without cone $m = 2,48$ Attenuation factor with cone $m = 2,50$

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Compression device (optional)	Can be remotely controlled, cone radiotransparent, detachable and replaceable (3 shapes)
Compression force:	5 to max. 155 N or 80 N ¹ , movement blockage starting from 50 N compression force
Speed:	Compression/decompression approx. 7.5 cm/s
Force indication:	Digital (LCD) in steps of 1 through 15 or 8 ¹ at the system remote control console
Cone/tabletop distance:	2 cm to 50 cm (standard cone)
Park position:	Cone in max. decompression position
Projection angle:	+ 30° to - 30°
Tomographic device (optional)	Linear tomography in all table positions with cassette (only with cassette spotfilm device) and digital (I.I.); automatic positioning of object and image receptor in the working area.
Tomographic angle/ tomographic time combinations:	8° with 0.4 s/ 0.8 s (working area 57.5 cm); 20° with 0.6 s/ 1.2 s (working area 42.5 cm); 40° with 1.2 s/ 2.5 s (working area 11.0 cm) Tomographic angle at 300 mm fulcrum height
SID:	115 cm
Fulcrum height:	10 to 300 mm above tabletop, adjustable millimeter by millimeter at 0.5 cm/s; Laser line light localizer (optional) for fulcrum height on the patient; Operation on the system remote control console and table-side

Components

Image intensifier	SIRECON 33-4HDR 4 image fields: Ø 33 cm; Ø 22 cm; Ø 17 cm; Ø 13 cm SIRECON 40-4HDR 4 image fields: Ø 40 cm; Ø 30 cm; Ø 22 cm; Ø 17 cm
TV system	VIDEOMED DHC High-resolution TV camera with maintenance-free 1K CCD sensor for digital fluoroscopy and fluororadiography
Dynamic response	max. 66 dB signal-to-noise ratio
TV matrix	Matrix 1024 ²

¹ configuration for Japan only

TV frame rate	max. 25 f/s; with CAREVISION 12,5; 8; 3 pulses/s
Brightness control	Constant image brightness through automatic gain control
TV standard	72 Hz progressive scan, independent of frequency VIDEOMED DH High-resolution TV camera with maintenance-free 1K CCD sensor for digital fluoroscopy, fluororadiography and DSA
Dynamic response	max. 69 dB, optimized for DSA
TV matrix	Matrix 1024 ²
TV frame rate	max. 30 f/s; with CAREVISION 15; 7,5; 3 pulses/s
Brightness control	Constant image brightness through automatic gain control
TV standard	72 Hz progressive scanning, independent of frequency
Monitor	SIMOMED HM; high-line with flicker-free display 72 Hz; 44 cm or.. 54 cm screen diagonal; SIMOMED HC; 1024 lines, flicker-free display 72 Hz; 44 cm screen diagonal; LCD monitor 18"; 46 cm screen diagonal;
Tube assembly	OPTITOP 150/40/80HC-100, cover with fan.
Focal spot nominal value (ICE 60336):	0.6/1.0
Nominal power (IEC 60613):	40 kW/80 kW
Cold power:	52 kW/103 kW
Nominal voltage (IEC 60613):	150 kV
Anode angle:	12°
Anode heat storage capacity:	580 000 J (783 000 HU)
Anode rotation frequency:	Radiography: 150 Hz/ 180 Hz Fluoroscopy: 20 to 30 Hz
Mean continuous power:	max. 450 W
Total filtration (IEC 60601-1-3):	2.5 mm Al at 80 kV

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Inherent filtration:	1.5 mm Al at 80 kV
Leakage radiation (IEC 60601-1-3):	<0.8 mSv/h at 150 kV/450 W in 1 m distance
Load curves:	Refer to the X-ray tube assembly operating instructions

Primary collimator

Max. field size	35 cm x 35 cm at 0.7 m SID 43 cm x 43 cm at 1.0 m SID 42.5 cm x 42.5 cm at 1.0 m SID (for collimator with DSA module)
Min. field size	< 3.0 cm x 3.0 cm at 1.0 m SID
Angle of rotation	± 50° about the central beam axis
Halogen lamp	Only original Siemens replacement lamps may be used! 24 V / 150 W / part no.: 8375545 G2107
Inherent filtration	1.0 mm Al at 70 kV
Additional filters	0.1 mm / 0.2 mm / 0.3 mm Cu (manual filter selection)
Radiation protection	depending on regulations, up to max. tube voltage of 150 kV
Brightness of full-field light localizer	≥ 160 lux (measured at a distance of 1m) (if original Siemens three-field templates and dose measurement chambers are used)
Dimensions (height x width x depth)	183 mm x 232 mm x 352 mm (without DSA module) 262 mm x 233 mm x 380 mm (with DSA module)
Max. weight (without accessories)	10.5 kg to 15.5 kg (with DSA module)
Max. weight of the accessories	≤7kg
Connected load	30 - 40 V AC ; 50/60 Hz; 8A
Aperture angle	28° / 28°

X-ray generator

Line connection

Nominal voltage/
line frequency 400 V +/- 10%, 50/60 Hz three-phase
(440/480 V +/- 10%, 50/60 Hz three-phase via internal line-matching transformer,
expansion)

Internal line resistance POLYDOROS SX 65:
0.15 ohms (400 V)
0.18 ohms (440 V)
0.22 ohms (480 V)

POLYDOROS SX 80:
0.10 ohms (400 V)
0.14 ohms (440 V)
0.16 ohms (480 V)

Nominal load at 400 V: 34.6 kVA
at 440 V: 38.0 kVA
at 480 V: 41.5 kVA

**Radio interference
suppression/EMC:** EN 60 601-1-2

Type of protection: Protective class I, according to IEC 601 - 1

Degree of protection: IP 20 according to IEC 529

Ambient conditions (operation)

Temperature range + 10°C to + 40°C

Relative humidity 20% to 75%, not condensing

Atmospheric pressure 70 kPa to 106 kPa

Weight Maximum expansion: 290 kg

**High-voltage wave-
form** Multipulse

Output POLYDOROS SX 65:
800 mA at 81 kV
650 mA at 100 kV (according to IEC 601)
430 mA at 150 kV

POLYDOROS SX 80:
980 mA at 81 kV
800 mA at 100 kV (according to IEC 601)
530 mA at 150 kV

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Fluoroscopy	Working range: Normal fluoroscopy: from 40kV/0.2mA to 110kV/4.1mA High-contrast fluoroscopy: from 40kV/0.2mA to 110kV/18mA maximum of 4 FLUO curves can be configured
Tube voltage	53 values from 40 to 150 kV In steps of half Siemens exposure points (EP) or 1 EP (configurable)
Automatic system	0-,1- point technique with continuously falling load 2-, 3- point technique with constant load 3- point technique (with IONTOMAT PL) with constant load
mAs integrator	65 values from 0.5 mAs to 800 mAs In steps of half Siemens exposure points (EP) or 1 EP (configurable)
Switching time	1- point technique: 1 ms to 5 s with mAs and time postindication 2- point technique: 2 ms to 5 s depending upon kW, mAs and kV 3- point technique: 20 ms to 5 s depending upon kW, mAs and kV in 49 steps In steps of half Siemens exposure points
Tube assembly connection	2 Siemens double-focus tube assemblies
Number of workstations	max. 5
Automatic exposure control	IONTOMAT PN with 6 measuring inputs for measuring chambers as well as multiplier connection (option) or photodiode array (PDA)
Tolerances	kV accuracy +/- 5% mAs accuracy +/- 5% or +/- 0.5 mAs, depending on which value is higher. mA accuracy +/- 5% or +/- 0.1 mA in fluoroscopy, depending on which value is higher mA accuracy +/- 10% in radiography