

# SCHEDA TECNICA TAC PHOTON COUNTING

## Performance e risoluzione

### Tubo e detettore

Tubi radiogeni	2 tubi radiogeni Vectron
Detettori	2 detettori QuantaMax Photon Counting

## Performance e risoluzione

Numero di strati acquisiti	2 x 144 strati
Numero di strati ricostruiti	2 x 288 strati
mA	Fino 1300 mA
Risoluzione temporale	Fino a 66 ms
kV	70, 90, 120, 140 kV Sn100, Sn140 kV
Copertura dell'asse Z	144 x 0.4 mm 120 x 0.2 mm (Quantum HD)
Risoluzione spaziale	0,11 mm (trasversale) in Quantum HD

## Potenza e velocità

Potenza	2 x 120 kW
Portata massima del tavolo	Fino 307 kg
Velocità	Fino a 737 mm/s (con Turbo Flash)

<b>Gantry</b>	
Gantry tilt in +/- °	0
Fastest Rotation time [s]	0.25
Temporal resolution [ms]	66
Aperture [cm]	82
<b>Tube Assembly System</b>	
Tube name	2x Vectron X-ray tube
Heat storage capacity [MHU]	30
Tube cooling rate [MHU/min]	2.7
Focal spot size	0.4 x 0.5, 0.6 x 0.7, 0.8 x 1.1
<b>Generator</b>	
Max tube mA	1300
Highest mA at lowest kV [mA @70/80kV]	1300
Generator power [kW]	240
kV settings [kV]	70, 90, Sn100, 120, Sn140, 140
<b>Detector</b>	
Material name	QuantaMax detector, CdTe
Detector width [mm]	2 x 57.6
Min. slice thickness [mm]	0.2
Physical detector rows	2 x 288
Number of detector channels per detector row	2752, 1984
Max. number of acquired slices per rotation	2 x 144
Max. number of reconstructed slices per rotation	2 x 288
Widest acquisition mode (slices x collimation) [# x mm]	144 x 0.4
Pitch	0.15 - 3.2
Max. scan speed for sub-mm slices [mm/s]	737
Max. z-coverage per rotation [mm]	184.3
<b>Table</b>	
Scannable range [cm]	200
Max. table load [kg]	307
Vertical table travel range [cm]	43.2 - 101.8, 56.8 - 95.3
Max. table feed speed [mm/s]	737
<b>Reconstruction</b>	
Max. reconstruction speed [fps]	40
Reconstruction matrix	512 x 512 768 x 768 1024 x 1024
<b>Dose reduction features</b>	
Dose modulation [y/n]	y
Automatic kV selection [y/n]	y
Selectable beam filtration for ultra low dose acquisition (e.g. Tin Filter) [y/n]	y
Iterative reconstruction [y/n]	y, Quantum Iterative Reconstruction
Dynamic z-axis collimation [y/n]	y
Organ dose modulation [y/n]	y
<b>Other Features</b>	
DE Imaging [y/n, method]	y, Quantum spectral imaging
Cardiac Imaging [y/n]	y
4D scan range [cm]	Body perfusion: 25 Brain perfusion: 11 Dynamic: 81
Metal artifact reduction [y/n]	y

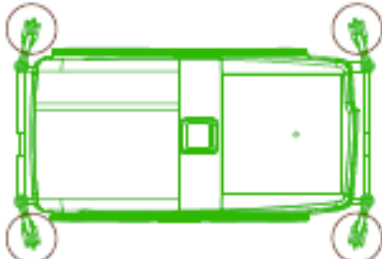

## Basic Planning Information

Pos.	Description	Weight (kg), Heat dissipation to the air (W)		
		kg	W	Remark
1.01	Gantry	2850	1000	#1, Isocenter at 1020 mm
1.02	Multi Purpose Table MPT Vitus (2000 mm scannable range)	500	300	
1.03	ALON UPS cabinet with IRS XL20-1H	410	3300	885 x 1028 x 1290 mm
1.04	Wireless Access Point	3		
1.05	Control unit with TFT monitor, control box, keyboard	9	100	
1.06	Power Distributor			by customer
	#1 Additional heat dissipation up to 21 kW to water			

## Room Dimensioning

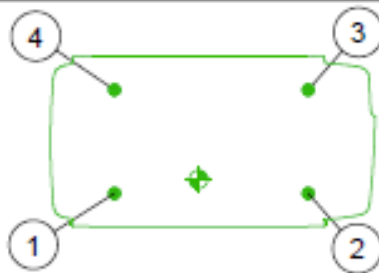
Room dimensioning
The indicated room dimensions have to be checked on site. The planning department has to be informed about possible deviations. Otherwise we cannot assume any guarantee for the accurate implementation of the dimensions indicated in the planning documents.
Room height
Technically required minimum room height 2250 mm Measured from the highest point of the finished floor (with covering) to the lowest point of the ceiling
On-site LAN network
Poor network bandwidth impairs the performance of image transmission significantly. The ICSi-1d (11362303) can't communicate with an Ethernet slower than Gigabit. The other ICSi- types can still connect to a 100 MBit network. If the ICSi-1d is ordered and the customer can only provide a 100 MBit/s network, a switch must be connected to adapt the speed of 1 GBit/s to the hospital's 100 MBit/s network. Either the switch 10547105 can be ordered, or the customer's IT may provide their own switch.

## Statics and Transport

Transport		not to scale
The transport route (doors and hallways) needs sufficient dimensions for the following parts!		
Gantry with transport device		
Transport rollers swiveled out 2751 x 1746 x 2002* mm (L x W x H)	Transport rollers swiveled in 3448 x 1260 x 2002* mm (L x W x H)	
		
* The transport device with the gantry can be lowered to a ground clearance of 7 mm.		
<b>TIPPING HAZARD !</b> Transport with the rollers swivelled in is permissible only in narrow passages! As soon as the system has passed through narrow passages, the transport rollers have to be swivelled out again.		
Gantry with transport device 3000 kg , transport device 285 kg. The maximum possible floor load (2-point load) per roller may be reached during gantry transport. If necessary, cover the transport route with metal sheets to distribute the load.		
The door must have a final clearance of 1250 mm if bed entrance to the CT examination room is requested.		
PHS Vario2	Weight 609 kg	2600 x 824 x 1505 mm (L x W x H)
PHS Vitus	Weight 674 kg	2600 x 824 x 1505 mm (L x W x H)

## Statics

not to scale



The floor construction has to be performed solid and free of vibration, e.g. concrete flooring C20/25 to C50/60 corresponding to DIN EN 206-1, according to the maximum values as specified in the textblock "Floor and building vibrations".

It is recommended to test the weight capacity of the concrete or composite flooring by a stress analyst.

Fastening the gantry on the floor is possible but only necessary in countries prone to earthquakes or according to local regulations. Securing the patient table to the floor is mandatory.

Total weight of Gantry: 2850 kg		Total static load (center of gravity): $F_{stat\ total} = 28,5\ kN$			
Partial load on gantry foot number		①	②	③	④
Nominal static load after levelling	$F_{stat\ nom}\ [kN]$	6.5	8	8	6.5
Maximum dynamic load (amplitude) during gantry rotation	$F_{dyn\ max}\ [kN]$	$\pm 0.5$	$\pm 0.5$	$\pm 0.5$	$\pm 0.5$
Outer diameter gantry foot [mm]		80	80	80	80
Floor contact area gantry foot [cm <sup>2</sup> ]		50.27	50.27	50.27	50.27

During gantry installation and leveling, the maximum possible load on one gantry foot can be 16 kN (the gantry is standing on two diagonal feet). Design access floors for a weight capacity of min. 400 kg per slab/plate. During gantry transport, the load may be higher at certain individual points (3-point load, e.g. due to uneven flooring).

## Floor- and building vibrations

Floor- and building vibrations can reduce image quality!

Sources that produce vibrations are, e.g.:

Railroad routes, subways, roads, road works and construction sites, hospital power plants, mines, open-cast minings, quarries (explosions), ferry moorings, any other sources of striking vibrations. Any transient vibration has to be less than 0.5 m/s<sup>2</sup> peak-to-peak in the time domain.

The CT system is not sensitive to common vibrations. If the CT is away from vibrational sources, or the CT is replacing a CT system that to date has not shown image quality problems due to vibrations, it is usually not necessary to execute vibrational measurements.

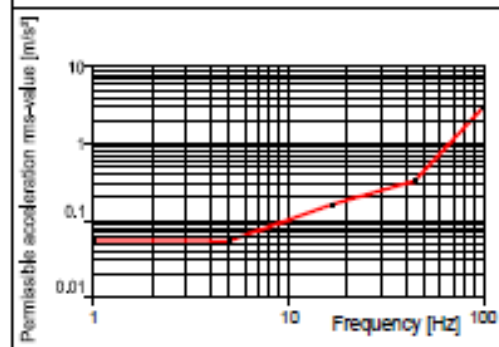
It is the customer's responsibility to contract a qualified specialist.

The specialist must implement site modifications to meet the specific limits, and to design structural solutions in case of deviations.

If there are any doubts, the following thresholds have to be verified by measurement:

In the three spatial directions, acceleration in vibrations at the mounting points of the computer tomograph (Gantry and Patient Handling System PHS) must not exceed the thresholds as described in the above shown diagram.

Permissible continuous floor vibrations

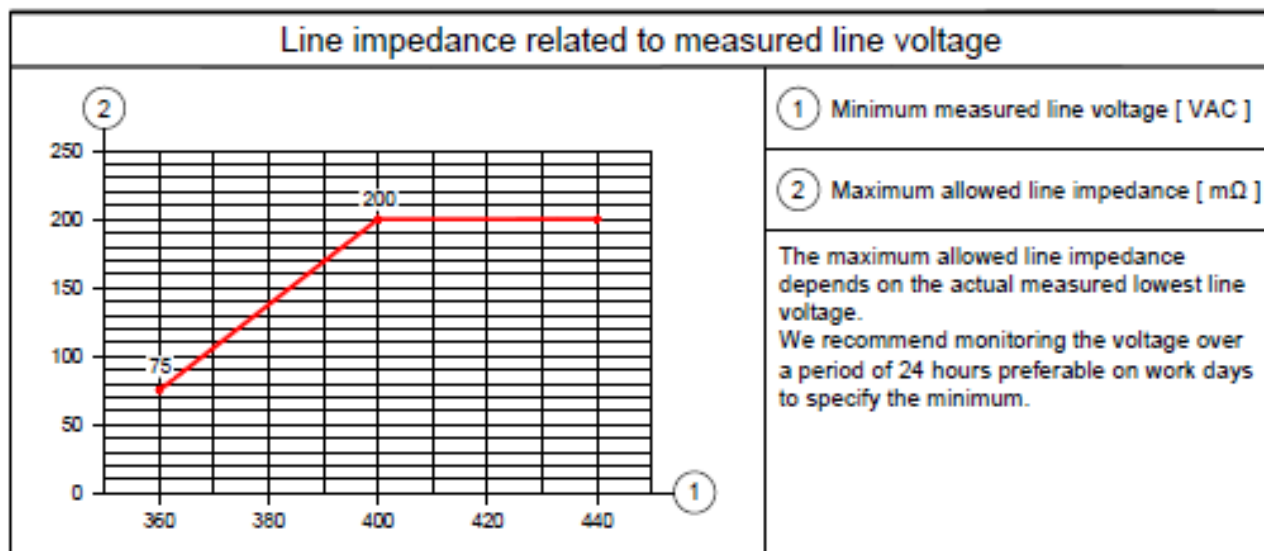


Environment		
Entire CT System	Temperature Relative humidity Barometric pressure Temperature gradient Installation altitude	18 to 30 °C 20 to 75 % 800 to 1060 hPa 6 K/h max. 2000 m.a.s.l.
Maintain the temperature range required to meet the needs of changing seasons. If it is not possible, an on-site room heating and air conditioning system is required. When supplying air from the outside (fresh air), we recommend the on-site use of coarse Filters, Filter class EU3 to EU4 for filtering dust particles up to > 10 µm (DIN 24185/Part 2).		

## Electrical Installation

Power requirements			
Power Line: TN-S	3/N/PE AC 50/60 Hz ± 3Hz	Connection value	173 kVA
Line Voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 6 kVA
Cable cross section is to be determined by country regulation		System off:	0 kVA
		for the time up to 4 s:	max. 300 kVA
Size of connector terminals in the gantry is 25 to 95 mm². N, PE adapter terminal 16 mm² available			

Power requirements (water/air - split)			
Power Line: TN-S	3/N/PE AC 50/60 Hz ± 3Hz	Connection value	173 kVA + 22 kVA
Line Voltage:	400 V ± 10 %	Power consumption:	
Line impedance:	see diagram	Stand-by:	≤ 6 kVA
Cable cross section is to be determined by country regulation		System off:	0 kVA
		for the time up to 4 s:	319 kVA
Size of connector terminals in the gantry is 25 to 95 mm². N, PE adapter terminal 16 mm² available			



Room lighting
<p>Ambient lighting in rooms with diagnostics or with workstations must comply with the respective local and national regulations.</p> <p>General requirements like the needed intensity of illumination - adjustable, reproducible, flicker-free or a limitation of dazzlings and reflections etc. have to be observed (EN 12464-1, DIN 5035-7).</p>

## General Information

### Display screen workstations

For setting up display screen workstations, take account of the guidelines in the Display Screen Workstation directive as well as any national regulations (e.g. EN ISO 9241-5).

### Smart Remote Services (SRS)

Smart Remote Services (SRS) is used for remote diagnostics as well as remote service to provide highest system availability.

Requirements:

- Broadband connection (minimum 4 MBit/s down- and 768 kBit/s upstream, optimum 30 MBit/s down- and 2 MBit/s upstream) without time or volume limitations
- Router (for exclusive use with SRS)

Data protection and security is defined in the Smart Remote Services security concept.

### Network Integration

The Siemens Healthineers components are using TCP/IP Protocol, a 100/1000 Mbit/s switched Ethernet network and static IP addresses.

The required network cabling (min. CAT 5 TP) has to be provided on site. Media converters, which are needed for using fibre optic cabling, are not in scope of delivery.

To prepare the implementation of the new system into the existing network environment, the availability of the needed network data at least two weeks before starting the installation is mandatory.

This is the only way to ensure a seamless integration of the new system into the workflow of the department.

### Notes on preparations for installation

Contracts for performing and supervising on-site installation preparations should be concluded with technically competent companies by the customer. The customer is responsible for timely and proper completion and supervision of all preparations for installation at the construction site in observance of all applicable legal regulations (e.g. X-ray regulations, radiation protection regulations) and all applicable general recognized rules of technology (e.g. VDE regulations, DIN standards).

Execution and supervision of installation preparations at the construction site and later observance of the standard operating conditions are not included in our duties. The customer is responsible for checking the static calculations and, where applicable, the air conditioning in the building to be equipped.

### Safety distances

Distances from moving parts of the medical device to walls, furniture and other equipment have to be kept to avoid injuries by crushing in compliance with local regulations, e.g. a minimum distance of 50 cm according to EN 349.

It is the customer's responsibility to ensure the above requirements are followed.

This is to avoid the risk of injury.

If safety distances are not maintained **appropriate on-site safety measures** have to be put in place. Clear visible markings according to national guidelines, e.g. crushing warning signs, hazard warning tape, hazard area cordon, safety mats, may be required.



### Radiation protection

The structural radiation protection depends on the location of the unit and the function of the surrounding rooms. By order, the planning departments of Siemens Healthineers prepare radiation protection calculation and radiation protection plan.