



## PHOTONIC PROFESSIONAL GT

The Photonic Professional *GT* is the world's highest resolution 3D printer. Based on two-photon polymerization (2PP), it allows for additive manufacturing and maskless lithography with the same device. Submicrometer resolution printing with feature sizes down to 200 nm and optical quality surface finishes are characteristic key features. Two powerful writing modes move the laser focus with respect to the photoresist: A piezo-mode for arbitrary 3D trajectories and a galvo-mode for ultra-fast structuring in a layer-by-layer process. With these unique features, the versatile system covers the broad demands encountered in nano-, micro- and mesoscale fabrication.

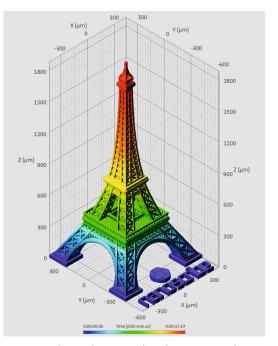
#### **SYSTEM & COMPONENTS**

The details of the turnkey system, its comprising components and available options are listed below and highlighted in the image.

#### **OPTIONS, ACCESSORIES & CONSUMABLES**

The following options, accessories and consumables are available to tailor the performance of the systems to application- and environment-specific requirements:

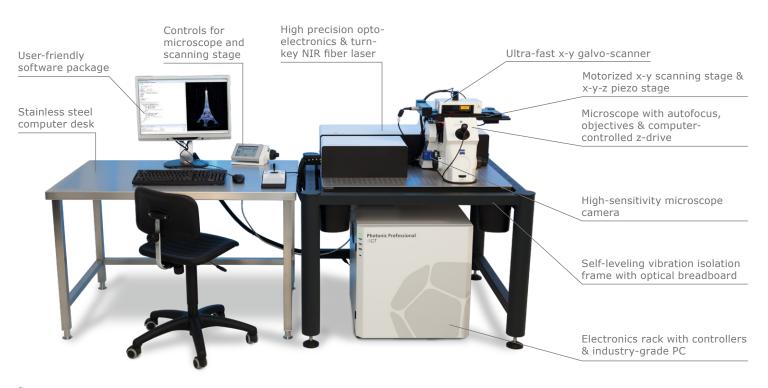
- Automatically exchangeable scanning objectives\*
- Diverse substrate holders and substrates\*
- Standard & cleanroom configuration\*
- 2PP-optimized photopolymer resins from our IP product lineup



Screenshot of print job editor DeScribe

#### **STARTER KIT**

All systems are delivered with a starter kit consisting of a supporting rack for the convenient placement of sample holders, beakers with a substrate holder for wetchemical development, and a selection of Nanoscribe's IP photopolymer resins.



# Photonic Professional GT

Printing performance'     Printing performance is ize       minimum 3D lateral feature size     200 nm (spec.); 100 nm (typ.)       finest 2D lateral resolution     1,500 nm (spec.); 1,000 nm (typ.)       beam scanning speed''     100 mm/s (typ.)       piezo scanning speed''     100 mm/s (typ.)       accessible print area by motorized stage     100 x 100 mm²       x-yz piezo range     300 x 300 x 300 x 300 x 301       x-yz piezo range     300 x 300 x 300 x 300 x 301       x-yz piezo range     300 x 300 x 300 x 300 x 301       maximum object height fine     300 µm 0 dependent on scanning objective***       maximum object height fine     300 µm       maximum object height fore     300 µm       laser source     NIR femtosecond laser       laser source     NIR femtosecond laser       laser safety     class 1 as complete system according to EN 60825-1:2007       Software package     print job editor including STL/DXF import and process preview       Electrical properties     print job editor including STL/DXF import and process preview       Electrical sperame     SO / 60 Hz       rated vortage range     AC 100 - 240 V       mainsupply overvoltage     category 11	Technical details	Photonic Professional <i>GT</i>
finest 2D lateral resolution 500 nm (spc.); 400 nm (typ.)   finest vertical resolution 1,500 nm (spc.); 1,000 nm (typ.)   beam scanning speed" 10 mm/s (typ.)   accessible print area by motorized stage 100 x 100 mm²   x-y z piezo range 300 x 300 x 300 x 330 µm³   x-y galvo scan range 200 - 600 µm 0/ dependent on scanning objective""   maximum object height fine 300 µm   maximum object height coarse 3 mm   Laser source NIR femtosecond laser   laser source Software package   print job editor including STL/DXF import and process preview   Electrical properties print job editor including STL/DXF import and process preview   rated venents S A (max.)   average power consumption < 500 V	Printing performance*	
finest 2D lateral resolution500 nm (spc.); 400 nm (typ.)finest vertical resolution1,500 nm (spc.); 1,000 nm (typ.)beam scanning speed"10 mm/s (typ.)piezo scanning speed"100 µm/s (typ.)accessible print area by motorized stage100 x 100 mm²x v; z piezo range300 x 300 x 300 µm³x y; galvo scan range200 - 600 µm Ø dependent on scanning objective"*maximum object height fine300 µmmaximum object height coarse3 mmLaser sourceNIR femtosecond laserlaser sourceasafetyclass rastetyclass 1 as complete system according to EN 60825-1:2007Software packageprint job editor including STL/DXF import and process previewElectrical propertiesprint job editor including STL/DXF import and process previewElectrical safetyc 100 - 240 Vrated vortage rangec 200 - 600 Wrated vortage rangec 200 Vrated trequencies50 / 60 Hzrated urrent5 A (max.)average power consumptionc 500 Wmain supply overvoltagecategory IIgrounding equipment conductorrequiredtotal weight320 kgdimensions ((k x L x H)90 x 90 x 142 cm³weight (electronics rack)95 kgminimum will distance30 cmAmbient conditionsaltitudealtitude2,000 m (max.)operating temperature22 ° (ć 4 ° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	minimum 3D lateral feature size	200 nm (spec.); 160 nm (typ.)
beam scanning speed**10 mm/s (typ.)piezo scanning speed**100 µm/s (typ.)accessible print area by motorized stage100 x 100 mm3x-y-z piezo range300 x 300 x 300 µm Ø dependent on scanning objective***maximum object height fine300 µmmaximum object height coarse3 mmLaser source & safetyIaser sourcelaser source for a staftclass 1 as complete system according to EN 60825-1:2007Software packagepraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical properties50 / 60 Hzrated frequencies50 / 60 Hzrated requencies50 / 60 Hzrated staftin accordance with EN 61010-1:2010Weight saft320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (lectronics rack)225 kgdimensions (lectronics rack)30 cmAmbient conditions30 cmaltitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature <t< td=""><td>finest 2D lateral resolution</td><td>500 nm (spec.); 400 nm (typ.)</td></t<>	finest 2D lateral resolution	500 nm (spec.); 400 nm (typ.)
piezo scanning speed"100 µm/s (typ.)accessible print area by motorized stage100 x 100 mm²x-y-z piezo range300 x 300 x 300 µm³x-y galvo scar range200 - 600 µm Ø dependent on scanning objective""maximum object height fine300 µmmaximum object height coarse3 mmLaser source & safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemNanoWritegraphical user interface controlling the systemDescribeprint job editor including STL/DXF import and process previewElectrical properties50 / 60 Hzrated voltage rangeAC 100 - 240 Vrated voltage rangeS A (max.)average power consumption< 500 W	finest vertical resolution	1,500 nm (spec.); 1,000 nm (typ.)
accessible print area by motorized stage100 x 100 mm²x-y-z piezo range300 x 300 µm³x-y givo scan range200 - 600 µm Ø dependent on scanning objective***maximum object height fine300 µmmaximum object height coarse3 mmLaser source & safetyasson as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemNanoWritegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical properties50 / 60 Hzrated voltage rangeAC 100 - 240 Vrated voltage rangecategory IIgrounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weight and measures (w/o working desk)tox 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (W x L x H)96 x 50 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditionsaltitude2,000 m (max.)00 cm (max.)operating temperature22° C (± 4° C)temperature stability±1° Cstorage temperature20° C (±10° C)	beam scanning speed**	10 mm/s (typ.)
x-y-z piezo range300 x 300 x 300 µm³x-y galvo scan range200 - 600 µm Ø dependent on scanning objective""maximum object height fine300 µmmaximum object height coarse3 mmLaser source & safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemNanoWritegraphical user interface controlling the systemDescribeprint job editor including STL/DXF import and process previewElectrical properties50 / 60 Hzrated voltage rangeAC 100 - 240 Vrated voltage range50 / 60 Hzrated voltage rangecategory IIgrounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weight and measures (w/o working desk)225 kgtotal weight320 kgdimensions (lectronics rack)95 kgminimum wall distance30 cmAmbient conditions22° C (± 4° C)temperature20° C (± 10° C)	piezo scanning speed**	100 μm/s (typ.)
x-y galvo scan range200 - 600 µm Ø dependent on scanning objective'''maximum object height fine300 µmmaximum object height coarse3 mmLaser source & safety3 mmlaser sourceNIR femtosecond laserlaser safetyclass 1 as complete system according to EN 60825-1:2007Software packageprint job editor including STL/DXF import and process previewDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangeAC 100 - 240 Vrated requencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	accessible print area by motorized stage	100 x 100 mm <sup>2</sup>
maximum object height fine300 μmmaximum object height coarse3 mmLaser source & safety3 mmlaser source & safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical properties7rated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated requencies50 / 60 Hzrated stratege power consumption< 500 W	x-y-z piezo range	300 x 300 x 300 μm <sup>3</sup>
maximum object height coarse3 mmLaser source & safetyIlaser sourceNIR femtosecond laserlaser safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemDeScribegraphical user including STL/DXF import and process previewElectrical propertiesrated voltage rangerated voltage rangeAC 100 - 240 Vrated voltage rangeS0 / 60 Hzrated currentS A (max.)average power consumption< 500 W	x-y galvo scan range	200 - 600 μm Ø dependent on scanning objective***
Laser source & safetyNIR femtosecond laserlaser safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemNanoWritegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangerated voltage rangeAC 100 - 240 Vrated drequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	maximum object height fine	300 μm
laser sourceNIR femtosecond laserlaser safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	maximum object height coarse	3 mm
laser safetyclass 1 as complete system according to EN 60825-1:2007Software packagegraphical user interface controlling the systemNanoWritegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangerated voltage rangeAC 100 - 240 Vrated current50 / 60 Hzaverage power consumption< 500 W	Laser source & safety	
Software packageNanoWritegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangerated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	laser source	NIR femtosecond laser
NanoWritegraphical user interface controlling the systemDeScribeprint job editor including STL/DXF import and process previewElectrical propertiesrated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	laser safety	class 1 as complete system according to EN 60825-1:2007
DeScribeprint job editor including STL/DXF import and process previewElectrical propertiesAC 100 - 240 Vrated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	Software package	
Electrical propertiesrated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	NanoWrite	graphical user interface controlling the system
rated voltage rangeAC 100 - 240 Vrated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 Wmain supply overvoltagecategory IIgrounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weights and measures (w/o working desk)220 kgtotal weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (lectronics rack)95 k Gminimum wall distance30 cmAmbient conditions220 00 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	DeScribe	print job editor including STL/DXF import and process preview
rated frequencies50 / 60 Hzrated current5 A (max.)average power consumption< 500 W	Electrical properties	
rated current5 A (max.)average power consumption< 500 W	rated voltage range	AC 100 - 240 V
Average power consumption< 500 Wmain supply overvoltagecategory IIgrounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weights and measures (w/o working desk)total weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	rated frequencies	50 / 60 Hz
main supply overvoltagecategory IIgrounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weights and measures (w/o working desk)total weighttotal weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions22° C (± 4° C)altitude22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	rated current	5 A (max.)
grounding equipment conductorrequiredelectrical safetyin accordance with EN 61010-1:2010Weights and measures (w/o working desk)total weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions22° C (± 4° C)altitude22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	average power consumption	< 500 W
electrical safetyin accordance with EN 61010-1:2010Weights and measures (w/o working desk)in accordance with EN 61010-1:2010total weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack) (W x L x H)56 x 60 x 64 cm³minimum wall distance30 cmAmbient conditions22° C (± 4° C)altitude22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	main supply overvoltage	category II
Weights and measures (w/o working desk)320 kgtotal weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack) (W x L x H)56 x 60 x 64 cm³minimum wall distance30 cmAmbient conditions22° C (± 4° C)altitude22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	grounding equipment conductor	required
total weight320 kgdimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	electrical safety	in accordance with EN 61010-1:2010
dimensions (W x L x H)90 x 90 x 142 cm³weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	Weights and measures (w/o working desk)	
weight (system w/o electronics rack)225 kgdimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions2,000 m (max.)altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	total weight	320 kg
dimensions (electronics rack) (W x L x H)56 x 60 x 64 cm³weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions2,000 m (max.)altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	dimensions (W x L x H)	90 x 90 x 142 cm <sup>3</sup>
weight (electronics rack)95 kgminimum wall distance30 cmAmbient conditions2,000 m (max.)altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	weight (system w/o electronics rack)	225 kg
minimum wall distance30 cmAmbient conditions2,000 m (max.)altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	dimensions (electronics rack) (W x L x H)	56 x 60 x 64 cm <sup>3</sup>
Ambient conditions2,000 m (max.)altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	weight (electronics rack)	95 kg
altitude2,000 m (max.)operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	minimum wall distance	30 cm
operating temperature22° C (± 4° C)temperature stability± 1° Cstorage temperature20° C (± 10° C)	Ambient conditions	
temperature stability ± 1° C   storage temperature 20° C (± 10° C)	altitude	2,000 m (max.)
storage temperature 20° C (± 10° C)	operating temperature	22° C (± 4° C)
	temperature stability	± 1° C
relative humidity 60 % (max.)	storage temperature	20° C (± 10° C)
	relative humidity	60 % (max.)
air pressure supply for vibration isolation table 4 - 6 bar	air pressure supply for vibration isolation table	4 - 6 bar
room lighting yellow light required****	room lighting	yellow light required****

Optimum achievable performance depends not only on the machine and its configuration but also on the photoresist used.

Please contact us for more specific information regarding your process.

\*\* Effective printing time depends on more aspects than merely the piezo's or the laser beam's scanning speed; smart software and control features as well as process tailored materials make the Photonic Professional GT the fastest and most precise 3D printer on the nano-, micro-, and meso-scale; please consult us for more details.

*More data available on request; please consult us for the proper choice of scanning objectives that match your application. Light tubes (e.g. OSRAM L 36 W/62 Yellow) or UV-filter tubes (e.g. ASR-LY5-UV (Metholight)) or any alternative yellow light sources* 

### CONTACT

Nanoscribe GmbH 76344 Eggenstein-Leopoldshafen

Phone +49 721 981 980 0 +49 721 981 980 130 Fax E-Mail sales@nanoscribe.com www.nanoscribe.com www.facebook.com/nanoscribe www.youtube.com/nanoscribe