

Technical details

Electrical properties

Rated voltage range	AC 100–240 V
Rated frequencies	50/60 Hz
Rated current max.	3 A / 230 V respectively 6.3 A / 100 V
Max. power consumption	630 W, typically < 400 W
Main supply overvoltage	Category II
Grounding equipment conductor	Required
Electrical safety	In accordance with IEC 61010-1:2010
Laser safety	Class 1, internal laser class 4 according to IEC 60825-1:2014

Ambient conditions

Operating conditions	Indoors
Operating temperature	21°C ± 2°C
Temperature stability	± 1°K/h
Maximum relative humidity	60%
Sound pressure level	55 dB
Air pressure for internal vibration isolation	Not required



CO₂ connection

Carbon dioxide (CO₂)	Purity: > 99% CO ₂
From source with pressure reducer	1 bar/14.5 psi optimum (0.8–1.2 bar / 11.6–17.4 psi)

Weights and measures

Total weight	158 kg
Dimensions (W x L x H)	94 x 71 x 65 cm ³
Minimum wall distance	10 cm

Femtosecond laser	
Max. average power	1,000 mW
Pulse length	90 fs
Center wavelength	780 nm
Repetition rate	80 MHz

Software	THINK3D
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Specifications	
Accessible writing area	Up to 120 x 100 mm ²
Horizontal and vertical stage resolution	≤10 nm
Max. travel distance z-axis	49 mm

Objectives	40x	20x	10x	5x	10x
Numerical aperture	1.4	0.7	0.4	0.25	0.3
Working distance ⁽¹⁾	0.13 mm	0.35 mm	3.1 mm	12.5 mm	10.0 mm
Immersion medium	Oil	Water	Air	Air	Air
Horizontal feature size ⁽²⁾	<220 nm	<420 nm	<740 nm	<1.2 μm	<980 nm
Vertical feature size ⁽²⁾	<550 nm	<2.9 μm	<9.2 μm	<23 μm	<16.4 μm
Highest resolution XY ⁽³⁾	<150 nm				
Highest resolution Z ⁽⁴⁾	<150 nm				
Field of view diameter ⁽⁵⁾	0.5 mm	1 mm	2 mm	4 mm	2 mm
Typical writing speed	150 mm/s	300 mm/s	600 mm/s	1,200 mm/s	600 mm/s
Throughput fine mode	0.05 mm ³ /h	0.25 mm ³ /h	4 mm ³ /h	30 mm ³ /h	6 mm ³ /h
Throughput coarse mode	0.25 mm ³ /h	2.25 mm ³ /h	40 mm ³ /h	300 mm ³ /h ⁽⁶⁾	60 mm ³ /h

⁽¹⁾ The working distance is the physical distance between the objective and the focal plane. However, the effective optical path length can vary due to refractive index mismatches and the numerical aperture (NA).

⁽²⁾ Calculated Full Width Half Maximum (FWHM) for printing power twice the threshold, see Zipfel et al "Nonlinear magic" doi:10.1038/nbt899.

⁽³⁾ Smallest free hanging line.

⁽⁴⁾ By submerging voxel in substrate.

⁽⁵⁾ Based on a field number of 20.

⁽⁶⁾ By adapting parameters, throughput of >450 mm³/h can be achieved.

