# NANO ONE / RED

1000 / 780

## 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 |

| WEIGHTS AND MEASURES | |
|---|---|
| Total weight | 124 kg |
| Dimensions (W x L x H) | 58.5 × 71 × 65 cm³ |
| Minimum back wall clearance | 10 cm |

| FEMTOSECOND LASER | |
|---|---|
| Max. average power | 1,000 mW |
| Pulse length | 90 fs |
| Center wavelength | 780 nm |
| Repetition rate | 80 MHz |

| SOFTWARE | Think3D |
|---|---|

SPECIFICATIONS

| | |
|---|---|
| Accessible writing area | Up to 120 x 100 mm² |
| Horizontal and vertical stage resolution | ≤10 nm |
| Max. travel distance z-axis | 49 mm |

| OBJECTIVES | 40x | 20x | 10x | 5x |
|---|---|---|---|---|
| Numerical aperture | 1.4 | 0.7 | 0.4 | 0.25 |
| Working distance (1) | 0.13 mm | 0.35 mm | 3.1 mm | 12.5 mm |
| Immersion medium | Oil | Water | Air | Air |
| Horizontal feature size (2) | <220 nm | <420 nm | <740 nm | <1.2 µm |
| Vertical feature size (2) | <550 nm | <2.9 µm | <9.2 µm | <23 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 |
| Typical writing speed | 150 mm/s | 300 mm/s | 600 mm/s | 1,200 mm/s |
| Throughput fine mode | 0.05 mm³/h | 0.25 mm³/h | 4 mm³/h | 30 mm³/h |
| Throughput coarse mode | 0.25 mm³/h | 2.25 mm³/h | 40 mm³/h | 300 mm³/h (6) |

(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.

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