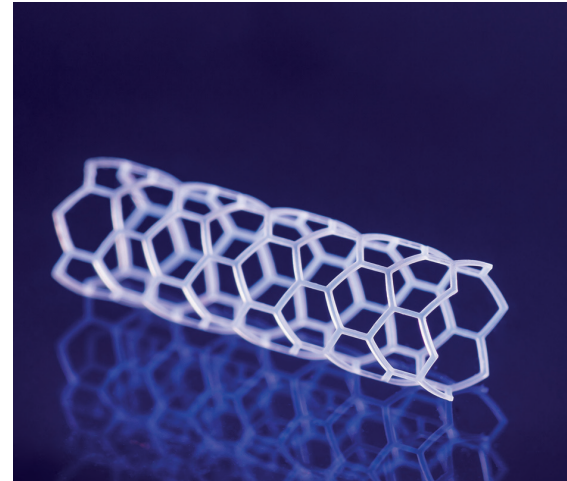




JenLas[®] femto Series

IR & Green Industrial Femtosecond Lasers



Advantages:

- 550 femtosecond pulse width
- Free and quickly adjustable pulse repetition rate
- Single pulse to 510 kHz
- Up to 80 μ J pulse energy
- One beam exit for IR and green
- Optical accessories like circular polarization, beam expanders, F-Theta lenses
- Robust monolithic cavity
- Temperature range up to 35 °C
- Easy system integration
- Industrially proven thin disk technology made in Germany
- Worldwide Jenoptik support

Customer Benefits:

- Non-thermal "cold" laser processing
- Nonlinear absorption in transparent materials
- Extremely clean, precise and damage-free processing, free of melt, bur and debris
- Reduced cost of post-processing
- Reliable 24/7 laser operation in production environments
- Long life diodes and oscillator
- Low maintenance cost
- CE and FDA approval

Applications:

- Integration into micro machining systems for micro cutting, drilling, structuring
- Laser machining of nearly all materials, including temperature-sensitive, hard & brittle, transparent materials, like organics, NiTi, sapphire, glass, etc.
- Material-selective ablation in multi-layer systems
- Inner marking of transparent materials

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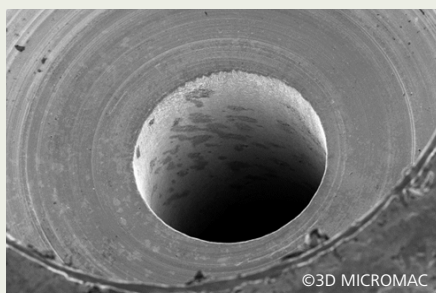
Specifications

| General Properties | JenLas® femto 10 | | JenLas® femto 16* | |
|--|---|-------------------|-------------------------------|---------------------|
| | IR | SHG (option) | IR | SHG (option) |
| Wavelength | 1030 nm | 515 nm | 1030 nm | 515 nm |
| Maximum output power | ≥ 10W | ≥ 5W | ≥ 16W | ≥ 8W |
| Maximum pulse energy | ≥ 50 µJ @ 200 kHz | ≥ 25 µJ @ 200 kHz | ≥ 80 µJ @ ≤ 200 kHz | ≥ 40 µJ @ ≤ 200 kHz |
| Beam diameter | 1.2 mm | 0.8 mm | 1.2 mm | 0.8 mm |
| Pulse repetition rate range** | single shot ... 200 – 510kHz | | single shot ... 100 – 510 kHz | |
| Fast beam modulator | yes (pulse picking, pulse energy attenuation) | | | |
| Beam quality M ² | < 1.3 | | | |
| Typical pulse width (sech ²) | 550 fs ± 150 fs | | | |
| Polarization | linear, >100:1 (IR: vertical, SHG: horizontal) | | | |
| Operating Conditions | | | | |
| Ambient temperature | 15 – 35 °C | | | |
| Ambient relative humidity | 10 – 80 % (non-condensing) | | | |
| Cooling | Chiller included (air/water and water/water versions available) | | | |
| Electrical Properties | | | | |
| Power requirements | Laser: 110 – 240 V AC (50/60 Hz), ≤ 1 kVA Chiller:(208)/230 V AC (50/60 Hz), ≤ 2.2 kVA | | | |
| Mechanical Properties | | | | |
| Dimensions (W x H x L) weight | Laser head: 500 mm x 273 mm x 968 mm 100 kg + 15 kg base plate Laser controller: 19" x 4 RU x 500 mm 12 kg Chiller: 19" x 7 RU x 640 mm 65 kg | | | |

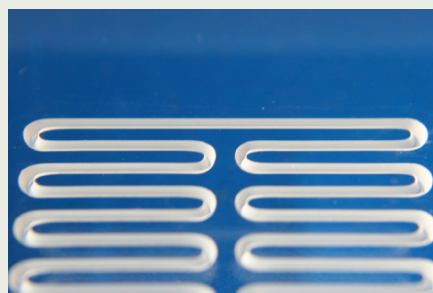
* preliminary specification

** resonant frequencies disabled

Application Examples



Drilling of precision micro holes in stainless steel (burr-free, high aspect ratios possible, defined taper angles possible).



Engraving of micro channels in glass and other materials (no micro-cracks, no adhering debris).



Cutting of micro structures in bio-resorbable polymers, (no melt or recast).

It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.



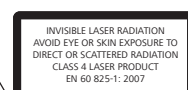
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