Technical data

- compact turn-key sealed short pulse femtosecond laser with dispersion management module
  - laser pulse duration: < 15 fs
  - repetition frequency: 85 MHz
  - mean laser output: 200 mW / 400 mW
  - wavelength: 800 ± 10 nm
- full-frame scanning, region-of-interest (ROI) scanning, line scanning, single-point illumination (spot scan, drilling)
- typical beam scan range: 350 μm × 350 μm (horizontal)
- stage range: 200 μm (vertical)
- focusing optics: magnification 40x
- numerical aperture (NA) 1.3
- video adapter for visualization with CCD-camera
- operating temperature: 15 ... 35 °C (59 ... 95 °F)
- relative humidity: 5 ... 95 % (non-condensing)
- power requirements: 230 VAC (50 Hz) or 115 VAC (60 Hz)

System dimensions

- stand: 490 × 280 × 480 mm³
- scan module: 280 × 190 × 90 mm³
- control unit: 450 × 300 × 130 mm³
- femtosecond laser: 507 × 280 × 81 mm³ (laser head)
- 483 × 280 × 88 mm³ (user interface)
- 175 × 104 × 102 mm³ (dispersion management module)

Notes: These specifications are subject to change without notice.
Images kindly provided by A. Uchugonova, A. Isemann, and K. König

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Applications

Nanojoule sub-20 fs laser pulses at 85 MHz repetition rate can be used to perform targeted transfection and optical nanoinjection of macromolecules as well as optical knock-out of intracellular organelles.

Of major interest is the transfection of stem cells. Stem cells may revolutionize current therapy such as gene therapy and tissue engineering. Genetically modified stem cells can be used for the production of immune system mediator proteins.

Femtogene® has been employed for the efficient targeted transfection of human salivary gland and pancreas stem cells.

References


