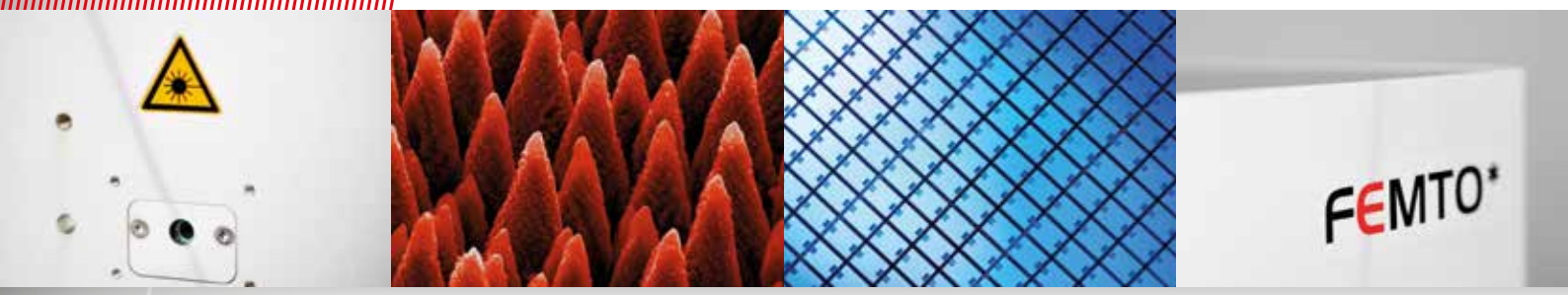


FEMTO* „All-in-One Block“ Femtosecond Laser

Rugged Design. Compact. Superior Quality.

FEMTO extends our broad product portfolio of Q-switched DPSS lasers with a novel type of industrial ultra short pulse laser, available in 1950, 1030 and 515 nm. The all fiber based USP laser is engineered for demanding 24/7 applications that require outstanding performance.
Laser head, power supply and control electronics are integrated in a rugged, compact „All-in-One Block“ of strengthened, machined aluminum for highest stability. The new design cuts down system costs significantly without any trade-offs in quality or laser lifetime. 48 VDC operating voltage and InnoLas Photonics´ field proven Laser Control Interface enable a simple and easy integration of the system. An integrated pulse picker/modulator is included for fast pulse and fast power control commands.

Applications

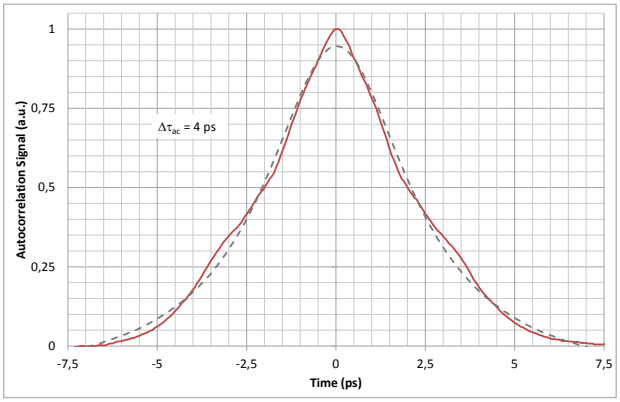
- Microfluidics, 3D Structuring of Glass, Brittle Materials
- 3D Structuring of Silicon, MEMS, SEMI, Silicon Photonics
- Micromachining, Microfeatures, Security
- OPV, PV and OLED Structuring and Processing
- Spectroscopy, Gas Sensing
- Medical Surgery, Tissue Engineering
- In Glass marking without micro cracks

Features

- „All-in-One Block“ design
- 48 VDC supply voltage
- Engineered for 24/7 use
- Integrated pulse picker / modulator
- Pulse duration 500 fs – 4 ps, software adjustable (1030 nm, 515 nm)
- Short pulse and long pulse versions available (1950 nm)
- Rep Rate from single shot to several MHz
- Pulse-on-demand option
- Burst mode option

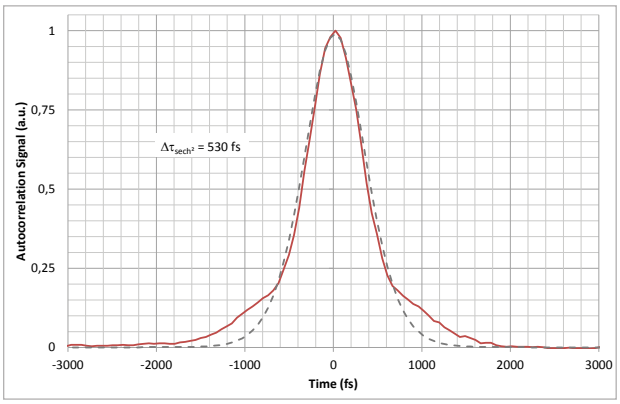
The new FEMTO is an excellent tool for demanding 24/7 industrial use. An integrated pulse picker/modulator, together with pulse-on-demand and burst mode options, combined with wavelengths of either 1950 nm, 1030 nm or 515 nm is a brand new set up in the laser industry. A new thinking for totally new kinds of applications is now possible.

Options & Customization



Available Options

- Pulse on demand
- Beam delivery optics
- Purge units
- Beam expander box
- Scan head adapter flanges
- Water-to-water or water-to-air chiller



Customization

- Customized laser performance
- Branded laser design
- Laser interfacing
- Branded laser control software
- Special laser developments

Since today's demanding applications deserve optimized laser parameters, we do not only sell off-the-shelf products. We can tailor our laser performance, design, interfacing or software to perfectly fit your individual application needs.

Specifications

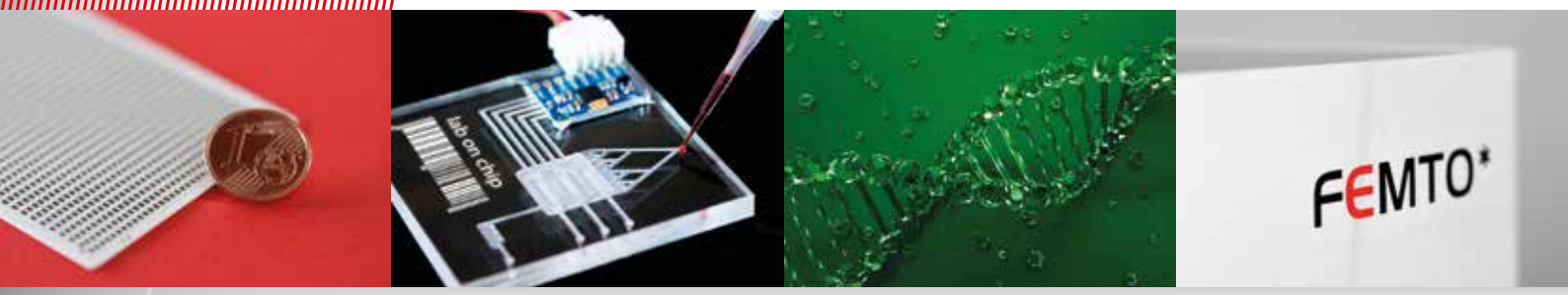
FEMTO 515 1030

Model	515-15-Yb-2500	1030-25-Yb-2500
Laser Medium	Yb, all fiber	Yb, all fiber
Wavelength	515 nm	1030 nm
Nominal Power	15 W @ 2500 kHz	25 W @ 2500 kHz
Repetition Rate	Single Shot to 2500 kHz	Single Shot to 2500 kHz
Pulse Picker / Modulator	integrated	integrated
Pulse Width	500 fs – 4 ps, software adj.	500 fs – 4 ps, software adj.
Pulse Energy	15 µJ @ 1000 kHz	25 µJ @ 1000 kHz
Peak Power	30 MW	60 MW
Pulse-to-Pulse Stability (rms)	< 5 %	< 3 %
Power Stability (rms, 8h)	< 5 %	< 3 %
Spatial Mode	M^2 < 1.5, TEM_{00}	M^2 < 1.5, TEM_{00}
Nominal Beam Diameter (at waist)	0.8 mm	1.0 mm
Nominal Waist Location (from output)	- 500 mm	-300 mm
Beam Divergence (full angle)	1.6 mrad	2.0 mrad
Nominal Beam Diameter (at output)	1.2 mm	1.5 mm
Polarization	linear, - 45°, > 100 :1	linear, - 45°, > 100:1
Circularity	> 90 %	> 90 %
Warm-up Time	< 20 min	< 20 min
Operating Voltage	48 VDC	48 VDC
Laser Power Cunsumption	< 700 W	< 700 W
Cooling	Water	Water
Ambient Temperature	15-30 °C, non condensing	15-30 °C, non condensing
External Control	RS232, USB, TTL, Analog Modulation	RS232, USB, TTL, Analog Modulation
Dimensions Laser Head	725 x 415 x 229 mm^3	725 x 415 x 229 mm^3
Dimensions Power Supply	n. a.	n. a.
Weight Laser Head	70 kg	70 kg
Weight Power Supply	n. a.	n. a.

FEMTO 1950

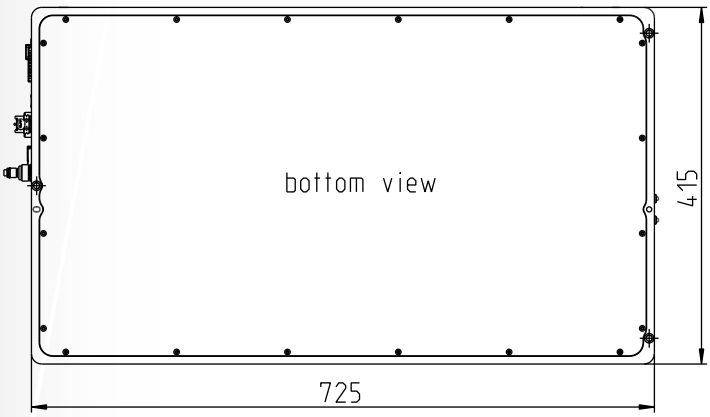
Model	1950-8-T-2500	1950-8-T-2500-LP
Laser Medium	Thulium, all fiber	Thulium, all fiber
Wavelength	1950 nm	1950 nm
Nominal Power	8 W @ 2500 kHz	8 W @ 2500 kHz
Repetition Rate	Single Shot to 2500 kHz	Single Shot to 2500 kHz
Pulse Picker / Modulator	integrated	integrated
Pulse Width	500 fs +/- 100 fs	4 ps +/- 1 ps
Pulse Energy	4 µJ @ 2000 kHz	4 µJ @ 2000 kHz
Peak Power	8 MW	1 MW
Pulse-to-Pulse Stability	< 3 %	< 3 %
Power Stability (rms, 8h)	< 3 %	< 3 %
Spatial Mode	M^2 < 1.5, TEM_{00}	M^2 < 1.5, TEM_{00}
Nominal Beam Diameter (at waist)	0.5 mm	0.5 mm
Nominal Waist Location (from output)	-300 mm	-300 mm
Beam Divergence (full angle)	4.0 mrad	4.0 mrad
Nominal Beam Diameter (at output)	2.0 mm	2.0 mm
Polarization	Horizontal, > 100:1	Horizontal, > 100:1
Circularity	> 90 %	> 90 %
Warm-up Time	< 20 min	< 20 min
Operating Voltage	48 VDC	48 VDC
Laser Power Cunsumption	< 500 W	< 500 W
Cooling	Water	Water
Ambient Temperature	15-30 °C, non condensing	15-30 °C, non condensing
External Control	RS232, USB, TTL, Analog Modulation	RS232, USB, TTL, Analog Modulation
Dimensions Laser Head	512 x 360 x 185 mm	512 x 360 x 185 mm
Dimensions Power Supply	n. a.	n. a.
Weight Laser Head	50 kg	50 kg
Weight Power Supply	n. a.	n. a.

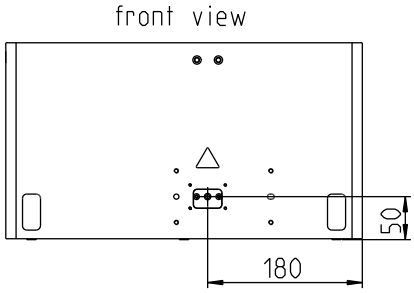
InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 2.0, 05 / 2019.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

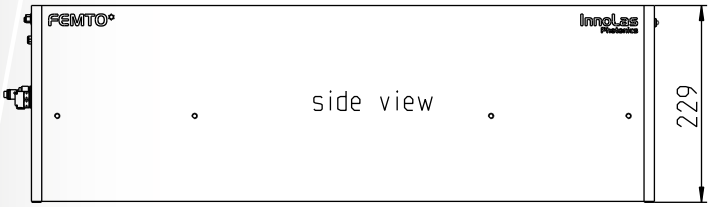


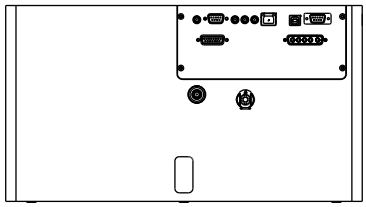
Technical Drawing

FEMTO 515, FEMTO 1030

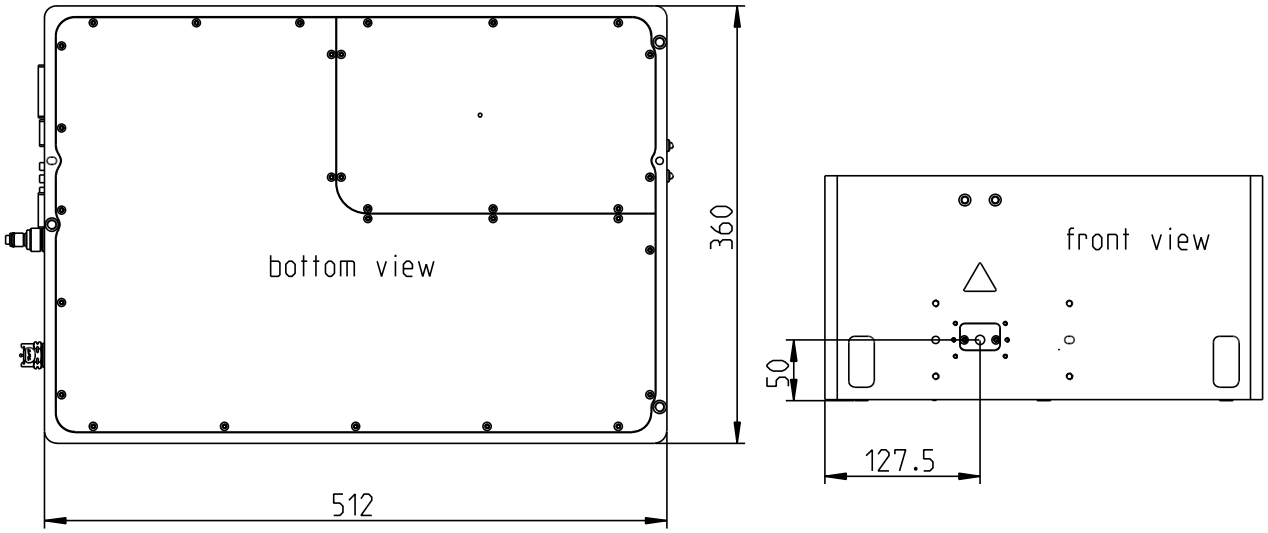








FEMTO 1950


bottom view
360
512
front view
50
127.5
side view
185
rear view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