

Jasper X1

High Power Femtosecond Fiber Laser

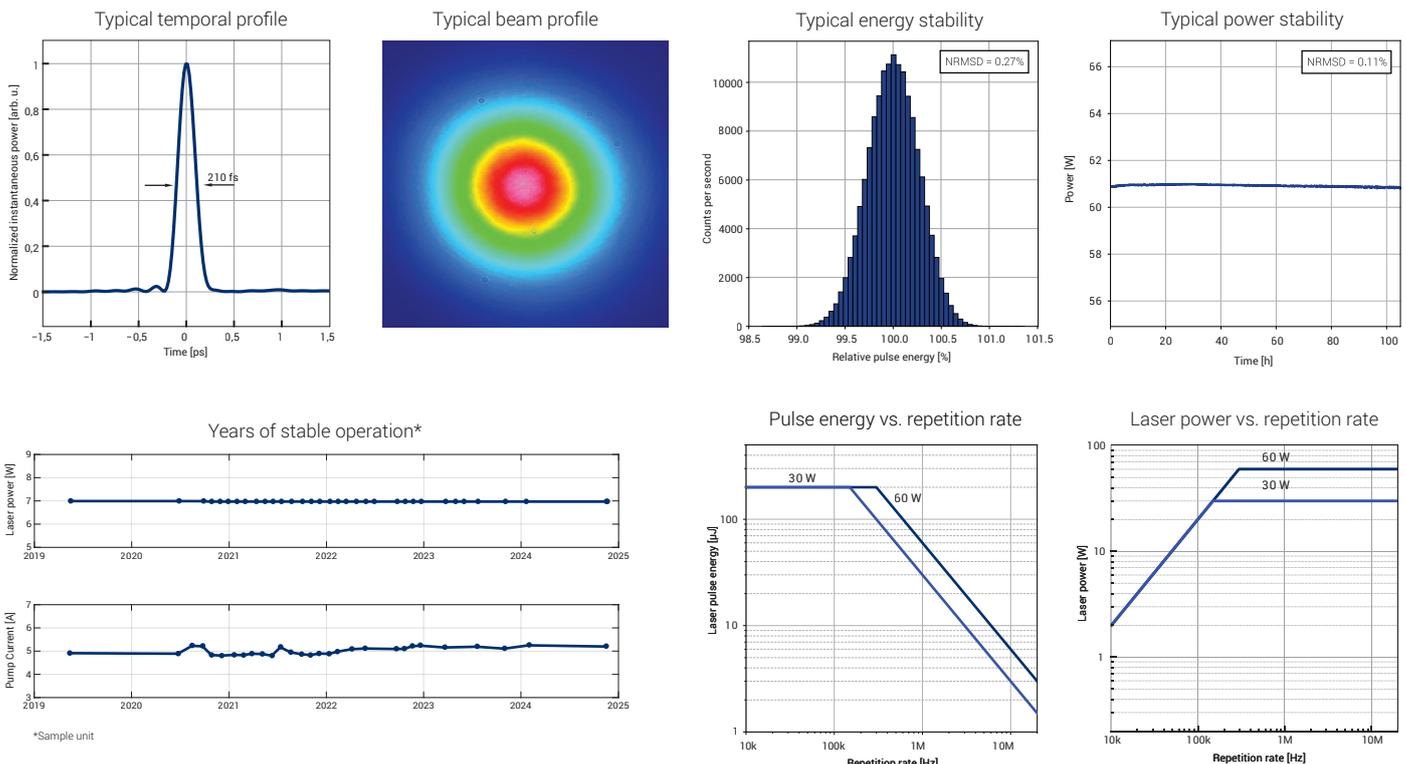


Key features:

- Proven stability & exceptional lifetime with average power up to 60 W
- Maximum pulse energy of up to 200 μJ
- < 270 fs - 20 ps pulse tunability
- Superior beam quality thanks to all-fiber optical design
- Advanced Pulse-on-Demand and Custom Envelope Burst with bursts up to 80 pulses
- Immediate reaction to external trigger signal providing 100-fold accuracy improvement of the laser system
- **5-year warranty** on oscillator and 2-year on the complete laser as a standard

The **Jasper X1** is a high-performance femtosecond laser system designed for maximum flexibility and precision in demanding applications. It features extended burst lengths with flexible envelope adjustment (Custom Envelope Burst – CEB), along with tunable pulse durations up to 20 ps. This allows for precise process optimization tailored to a wide range of materials and applications.

With Advanced Pulse-on-Demand (APoD) and nanosecond-level jitter, Jasper X1 delivers exceptional pulse timing precision - ideal for enhancing edge definition, corner processing, and maximized duty cycles. Built as a robust, all-fiber, SESAM-free system, Jasper X1 ensures consistent performance, long-term stability, and true maintenance-free 24/7 operation.



All specifications are subject to change without prior notice due to continuous improvements.

Reliable ultrafast laser sources for industry

Light confined in fiber for minimum maintenance and superior stability

Specifications

Model	JX30-100	JX30-200	JX30-200P	JX60-200	JX60-200P
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Output characteristics:

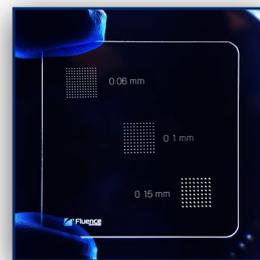
Central Wavelength	1030 ± 5 nm				
Average Power	30 W ⁽¹⁾			60 W	
Max. Pulse Energy	100 µJ	200 µJ		200 µJ	
Nominal Pulse Repetition Rate (PRR)	300 kHz	150 kHz		300 kHz	
Pulse Width	< 270 fs ⁽²⁾				
Tuning Range	< 270 fs - 8 ps		< 270 fs - 20 ps		
Pulse Repetition Rate (PRR)	Single-Shot to 20 MHz ⁽³⁾				
Pulse-on-Demand Max. PRR / Jitter	NEW	Standard (based on pulse picker)	Advanced ⁽⁴⁾ 1 MHz / < 50 ns	Standard (based on pulse picker)	Advanced ⁽⁴⁾ 1 MHz / < 50 ns
Max. Burst Energy	100 µJ ⁽⁶⁾	300 µJ ⁽⁶⁾		400 µJ ⁽⁶⁾	
No. of Pulses in MHz Burst Mode	2 - 80	2 - 80	2 - 12	2 - 80	2 - 12
Custom Burst Envelope ⁽⁵⁾	NEW	Optional	Included	Included	-

Other characteristics:

Beam Quality, M ²	< 1.2 (1.1 typical)
Beam Circularity	> 87%
Beam Divergence	< 1 mrad
Beam Diameter	2.5 ± 0.5 mm ⁽⁷⁾
Polarization	Vertical, PER > 28 dB
Beam Pointing Stability	< 20 µrad/°C
Long Term Power Stability - 100 h	< 0.5% ⁽⁸⁾
Pulse-to-Pulse Energy Stability - 24 h	< 1% ⁽⁸⁾
Options	Harmonic Module - 515 nm, 343 nm, 257 nm (automatic selection). Automated Mechanical Shutter
Cooling	Water
Control Interface	GUI (USB) / SCPI (RS232) / TTL (BNC) / Analog (BNC)
Laser Head Dimensions (L x W x H)	1096 x 446 x 100 mm
Power Supply Unit Size (L x W x H)	3U 19" rack unit: 376 x 485 x 133 mm
Laser Head Mounting Options	Horizontal / Vertical
Operation Ambient Temperature	15 - 30°C
Relative Humidity	10 - 80% (non-condensig)

- As a standard > 28 W will be delivered. > 30 W will be delivered upon request.
- < 240 fs typical.
- Maximum pulse repetition rate: 20.0 ± 0.5 MHz. Pulse picking up to 2 MHz.
In Advanced Pulse-on-Demand version, pulses can be triggered externally up to 1.0 MHz in Stabilized Energy Mode.
- PRR limit: 1000 ± 60 kHz. Enables constant pulse energy (Stabilized Energy Mode) at fluctuating PRR up to 1.0 MHz (enhanced corner processing and increased pulse positioning accuracy on the material). Constant pulse pitch in micromachining systems providing positioning synchronized output (PSO).
- Setting arbitrary burst envelope and adjusting amplitude of individual pulse within a burst
- Available in High Energy Burst mode (HEB) with PRR reduced below nominal PRR. HEB is available in JX30-100 variant upon request.
- 1/e², measured at 1 m.
- NRMSD under stable environmental conditions.

Flexible Power for Demanding Applications:



Through-Glass Vias drilling



Microelectronics manufacturing

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