

PicoBlade[®] Core

Next-generation picosecond laser platform

Benefits

Flexible PRF: Enables optimum power utilization and high efficiency across a wide range of applications

FlexBurst™: Programmable pulse bursts enable power scaling while preserving processing quality. Number of pulses in Flexburst is 1-40

Advanced pulse-on-demand (PoD) technology: Dynamic pulse control enhances material interaction and process optimization

Key Applications

PCB and electronics

PCB micro via drilling, glass and ceramics, PCB machining, surface texturing

Battery and energy storage

Electrode structuring, separator foil cutting, notching, coating removal

Display and glass processing

Ultra-thin glass cutting, OLED cutting

Medical device manufacturing

Catheter drilling, microfluidic chips, surgical tool processing

Solar and photovoltaics

Thin film scribing, xBC cell patterning

Product Overview

PicoBlade Core is Lumentum's latest advancement in ultrafast laser technology, designed to deliver identical performance to the proven PicoBlade 3 in an optimized design for easy system integration. Leveraging the field-proven ultrafast platform, with over 1,000 units shipped globally, PicoBlade Core offers industry-leading reliability and precision for high-throughput micromachining applications.

Engineered for integration into industrial environments, it is optimized for tasks such as solar patterning, PCB drilling, glass cutting, battery electrode structuring, and fine-feature machining in medical and display manufacturing.

With picosecond pulse durations, high repetition rates up to 8 MHz, and multi-wavelength flexibility (1064 nm, 532 nm, or 355 nm), PicoBlade Core with closed loop power control enables high quality, throughput and performance in micromachining.

Advanced features further enhance its versatility and precision – including AccuTrig™ for sub-micron pulse synchronization, FlexBurst and MegaBurst™ for tailored energy delivery, and BeamShaper for dynamic beam profile control.



Specifications

	IR	Green	UV
Wavelength (nm)	1064	532	355
Average power (W) @400 kHz			
High power	150	100	50
Medium power	80	50	30
Low power	20	12.5	7.5
Pulse energy (μJ) @400 kHz			
High power	375	250	125
Medium power	200	125	75
Low power	50	31.5	18.7
Pulse width (ps)	<12	<12	<12
Repetition rate ¹	Single-shot to 8 MHz		
Beam size	5 mm ± 10%		
Beam quality (M ²)	<1.3	<1.2	<1.2
Circularity	>85%		
Pulse-to-pulse energy stability	<1% RMS		
Pointing stability	<50 μrad/°C		

1. UV and green laser power can be optimized for preferred repetition rates.

Optional Features

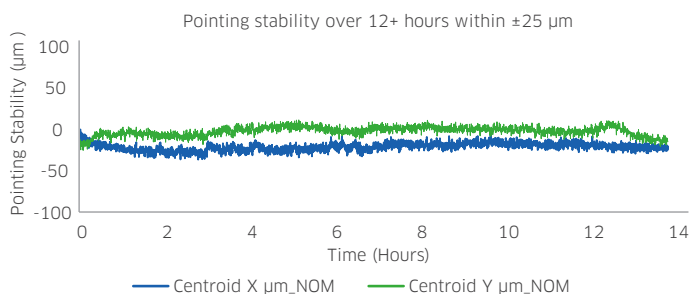
AccuTrig (up to 2 MHz): Patented, industry-leading trigger function increases throughput while improving precision and cut quality

MegaBurst (up to 1.6 mJ): Enables access to full laser power at lower PRFs (<400 kHz), supporting energy-demanding applications such as filamentation-based glass cutting, deep drilling, and beam-splitting

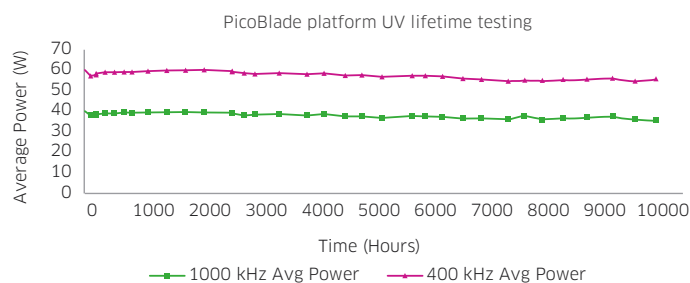
Beam shaper option: Adjustable beam size with or without customized diffractive optical element (DOE)

Performance

Minimal laser power variation

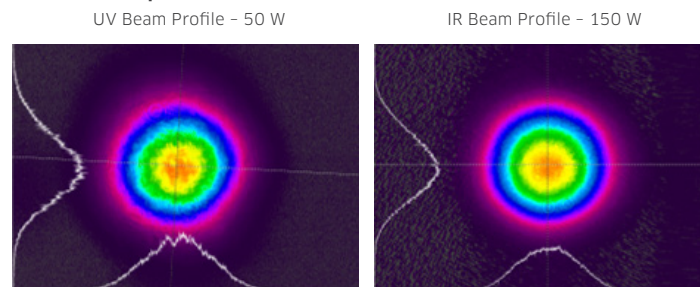


Unchanged pulse energy



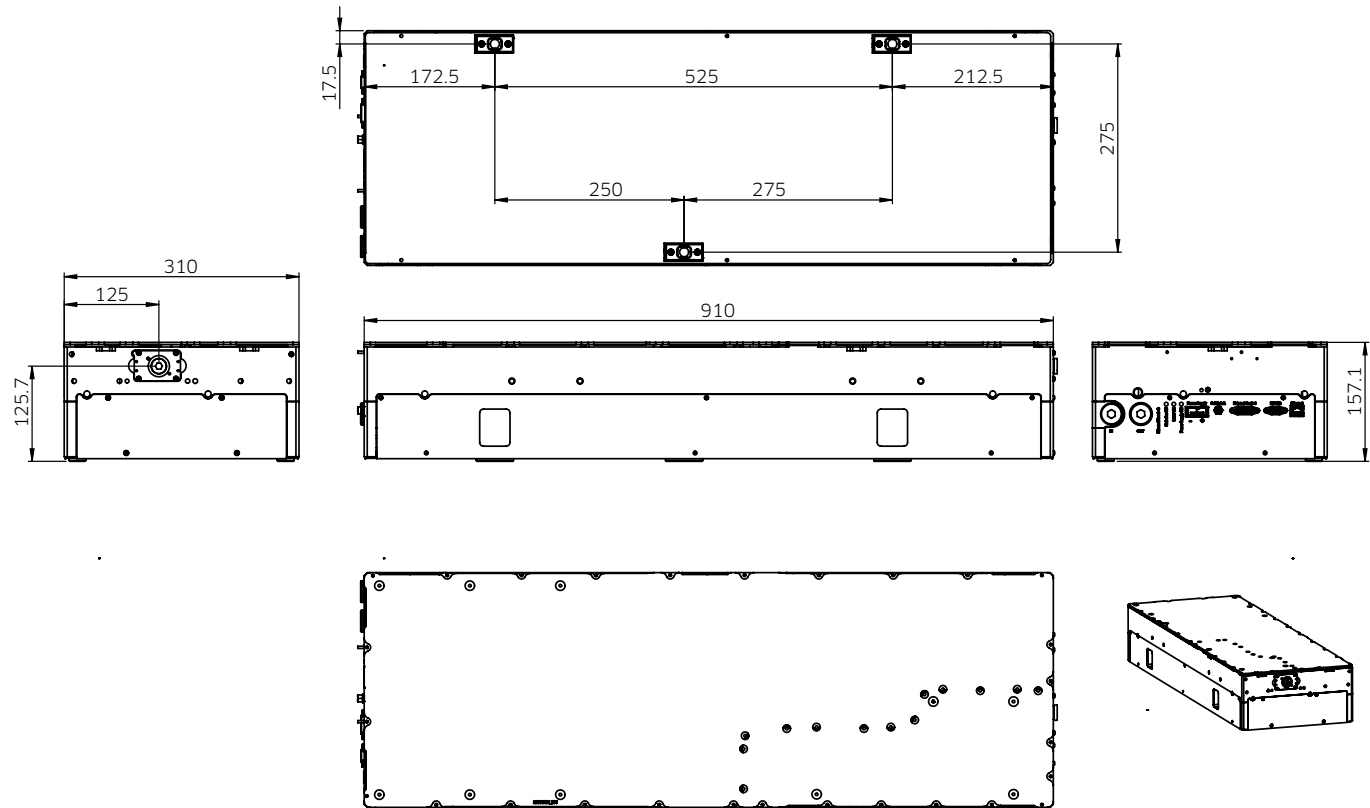
- No change in pulse energy and beam quality (M2X and M2Y) after 10,000 hours
- Open loop, no change to pump diode during testing

Stable beam parameters



Mechanical Specification

(Specifications in millimeters unless otherwise noted.)



Parameter	Specification Laser Head
Dimensions	910 mm (L) x 310 mm (W) x 157.1 mm (H)
Exit beam height	125.7 mm
Weight	Max 45 kg

Regulatory Compliance

The products listed in this datasheet comply with the following regulatory standards, and display the certification and laser safety markings shown below. Contact your local Lumentum sales representative for additional information on specific products or configurations.

Regulatory Standards

IEC/EN/UL/CSA 61010-1

IEC/EN 60825-1

FCC 47 CFR Part 15 & 18 (Class A)

IEC/EN 61000-6-4 (Class A)

IEC/EN 61000-6-2



Safety Certification Label



Laser safety warning label

Ordering Information

For more information on this or other products and their availability, please contact your local Lumentum account manager or Lumentum directly at customer.service@lumentum.com.



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