

# aeroPULSE PS

High power picosecond fiber laser platform

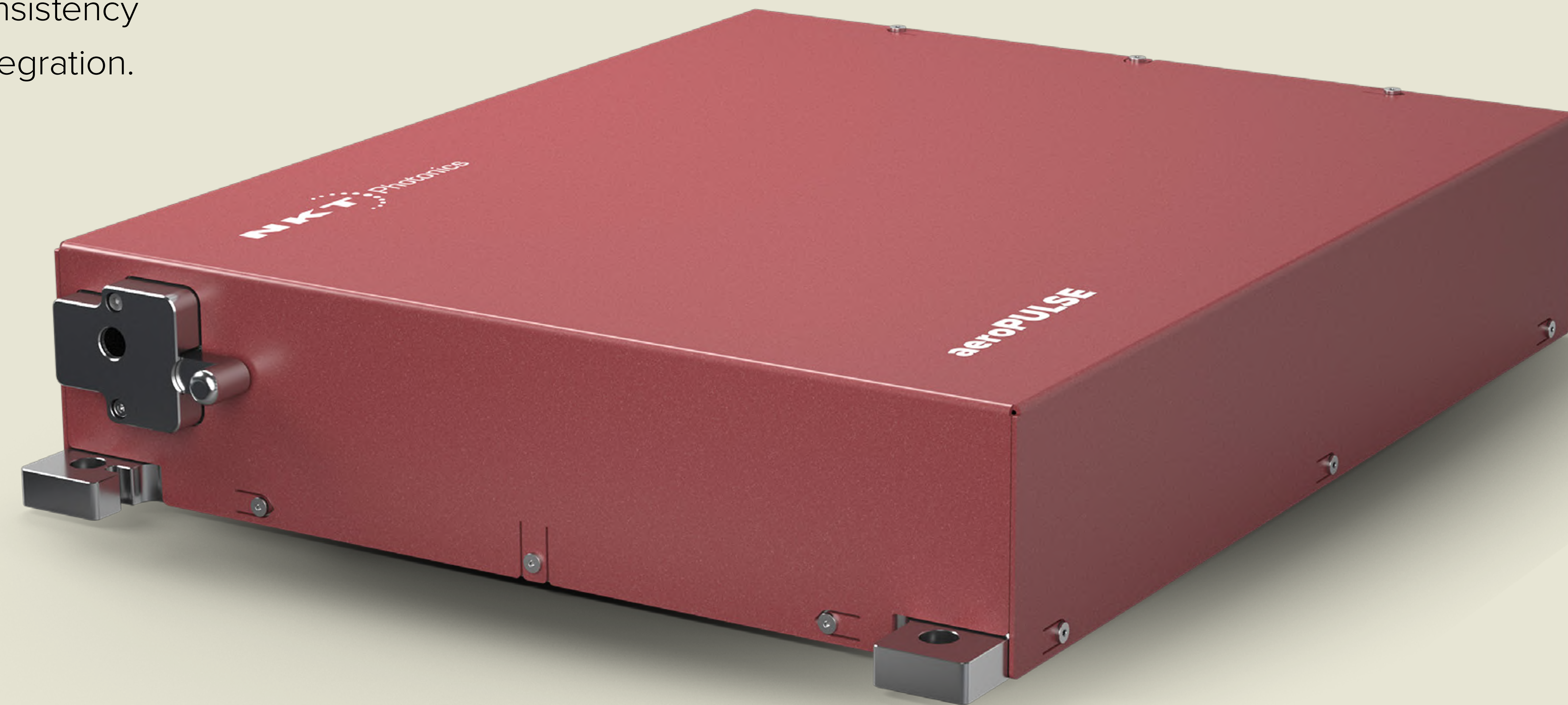


# Compact and rugged OEM fiber laser

## High-power industrial-grade picosecond fiber laser

The aeroPULSE PS series is an industrial-grade picosecond fiber laser platform based on our world-leading photonic crystal fiber platform.

Developed for demanding 24/7 OEM applications, the aeroPULSE PS series deliver a high unit-to-unit consistency and uptime, low cost of ownership, and ease of integration.



## aeroPULSE PS

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### Applications

**Laser direct imaging**

**Material processing**

**Semiconductor inspection**

**Harmonic conversion**

**Raman SRS imaging**

**OPO pumping**

**Supercontinuum generation**

**Quantum qubit manipulation**



# Reliable

## High-performance flexible picosecond laser platform

These rugged and compact OEM fiber lasers use state-of-the-art mode-locking technology to deliver ultra-short picosecond pulses with outstanding long-term stability.

The aeroPULSE PS series is a flexible laser platform that allows customization of pulse width, repetition rate, center wavelength, and spectral linewidth<sup>1</sup>. It provides market-leading narrow linewidth, essential for applications such as higher harmonic generation.

By virtue of its highly reliable fiber-based design, the aeroPULSE PS delivers excellent TEM<sub>00</sub> mode quality with low noise performance typically required for critical applications such as semiconductor inspection.

## Dual or triple switchable wavelength output

The aeroPULSE PS can be fitted with a second harmonic generator (SHG) or a third harmonic generator (THG) to further extend the operating wavelength range.

<sup>1</sup> Certain combinations of specifications can be subject to restriction.

## Maintenance-free and OEM-ready

The aeroPULSE PS series offers high stability with 24/7 operation and is ideal for maintenance-free OEM integration.

The system configuration consists of a 19” rack-mountable control unit and a very low profile laser head that can be mounted either horizontally or vertically. The complete system can be air-cooled for low output power performance or water-cooled for high output power performance

## Features

**Average power up to 40 W**

**Custom IR wavelengths from 1024 nm-1064 nm**

**Custom pulse duration from 2 ps-100 ps**

**Custom repetition rates from 10-400 MHz**

**Optional pulse picker 200 kHz-50 MHz**

**Optional narrow linewidth**

**Optional  $\pm 0.7$  nm wavelength tuning option**

**Optional Green & UV extension**

**Excellent beam pointing stability**

**System monitoring via remote diagnostics**

**No warm-up time**

**Compact and rugged OEM design**

**Low cost of ownership**

**Maintenance-free 24/7 operation**

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## Support and warranty

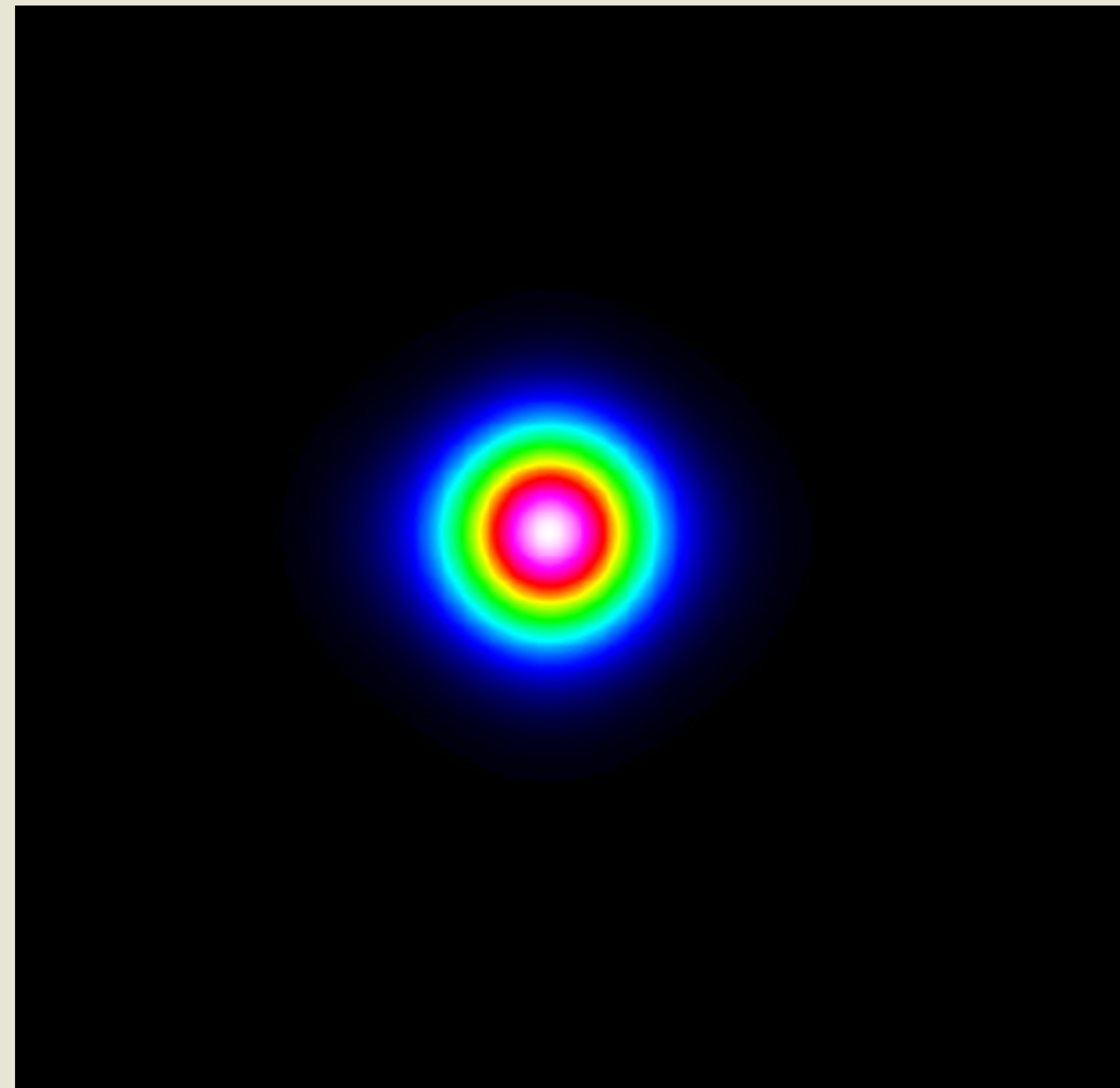
The product is covered by a comprehensive warranty. Service options are available.

For details, please enquire. All aeroPULSE lasers are completely maintenance-free and have an expected lifetime of more than 20,000 hours.

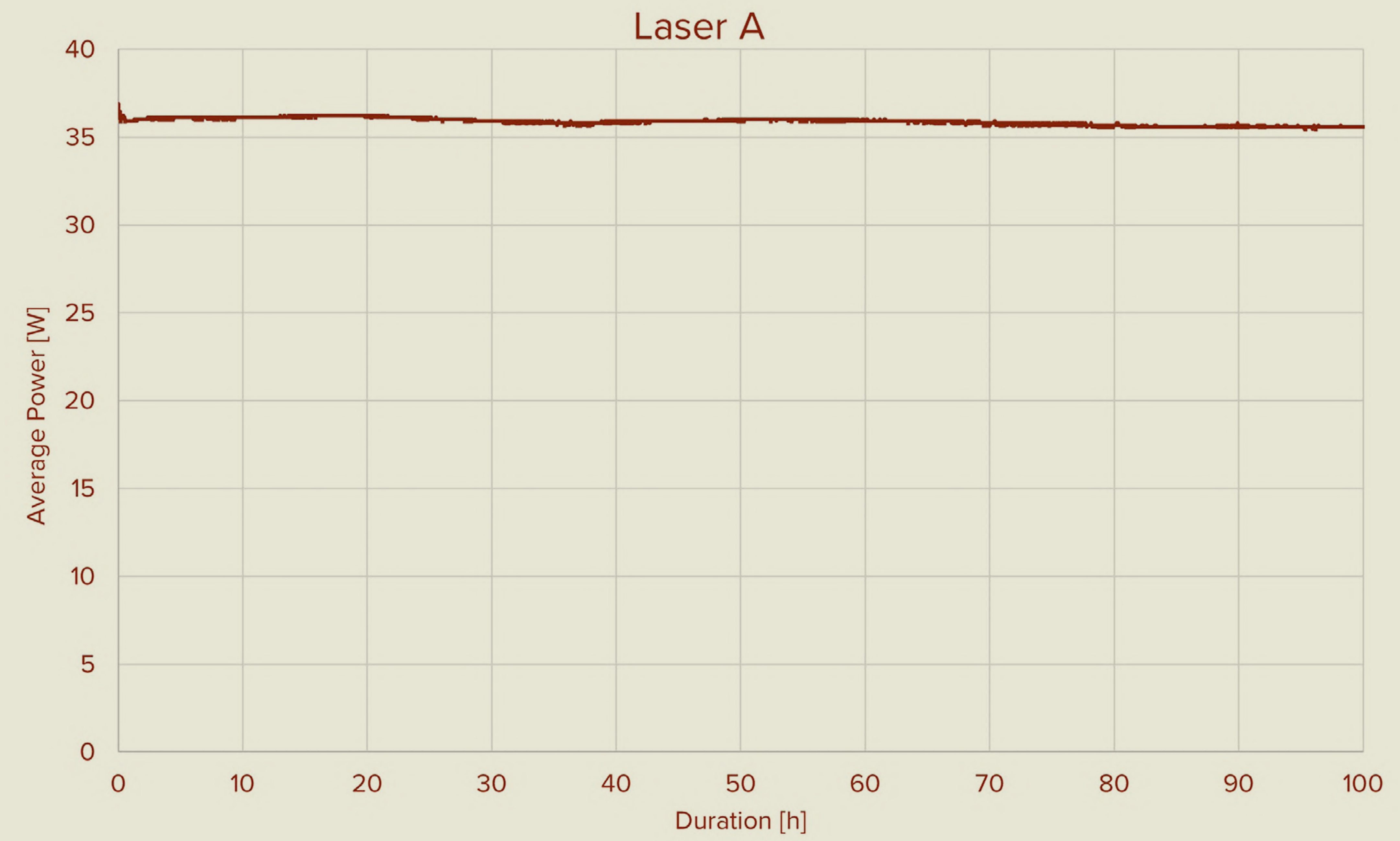
# Performance

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## Beam quality



## Power



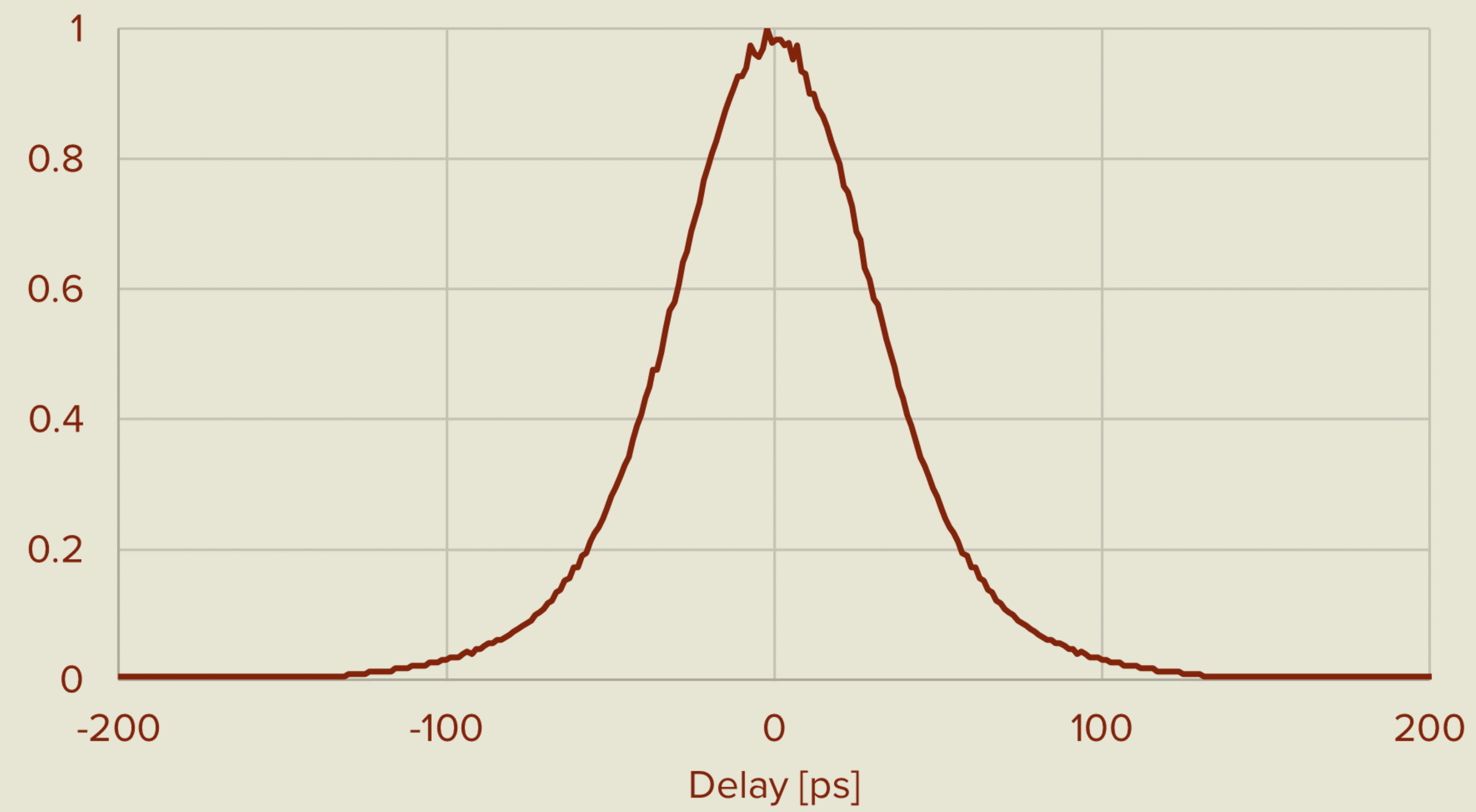


# Performance

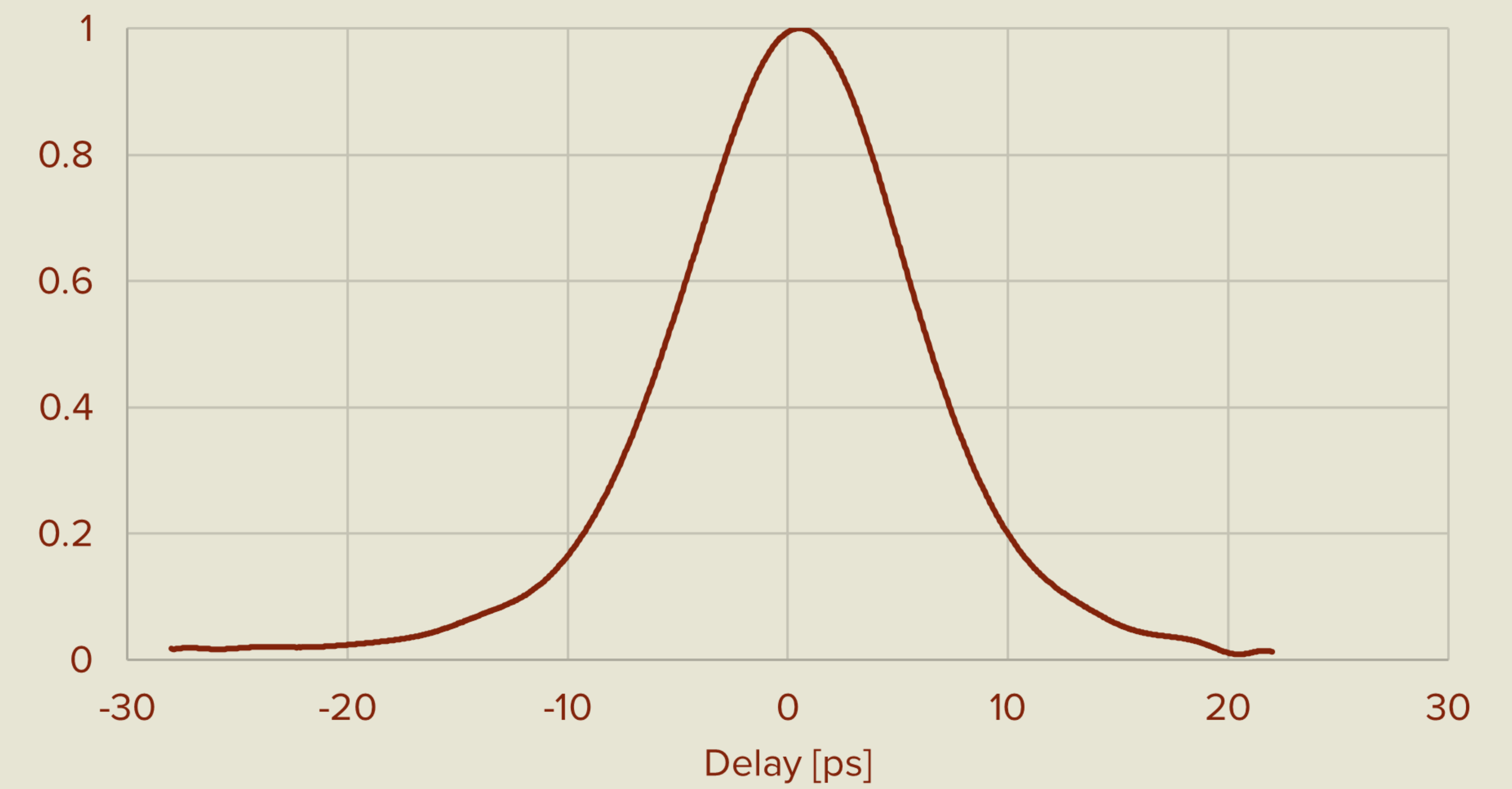
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## Pulse duration

Pulse duration (Sech2) = 43ps  
Laser A



Pulse duration (Sech2) = 6.8ps  
Laser C



# Specifications

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Example optical specifications (please enquire about your requirements)

	Laser A	Laser B	Laser C	Laser D
<b>Center wavelength [nm]</b>	1064	1024	532	355
<b>Power [W]</b>	> 35	> 22	> 12	> 1
<b>Pulse duration [ps]</b>	< 48	< 43	< 7	< 7
<b>Pulse energy [<math>\mu</math>J]</b>	> 1.4	> 0.44	> 0.25	> 0.12
<b>Operational repetition rate [MHz]</b>	25	50	0.2 - 50	80
<b>Spectral width (FWHM) [nm]</b>	< 0.2	< 0.175	< 2	< 1
<b>Beam diameter [mm]</b>	$\approx$ 1	$\approx$ 1	$\approx$ 1	1
<b>Divergence X <math>1/e^2</math> [mrad]</b>	< 1.7	< 1.3	< 1.3	< 1.0
<b>Divergence Y <math>1/e^2</math> [mrad]</b>	< 1.7	< 1.3	< 1.3	< 1.0
<b>Spatial mode, fundamental</b>	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.3$
<b>Power stability (50 h), RMS [%]</b>	< 0.5	< 0.5	< 0.5	< 1
<b>Pulse-Pulse stability, RMS</b>	< 1	< 1	< 1	< 1.5
<b>Polarization - linear, PER [dB]</b>	> 23	> 23	> 23	> 23

# Specifications

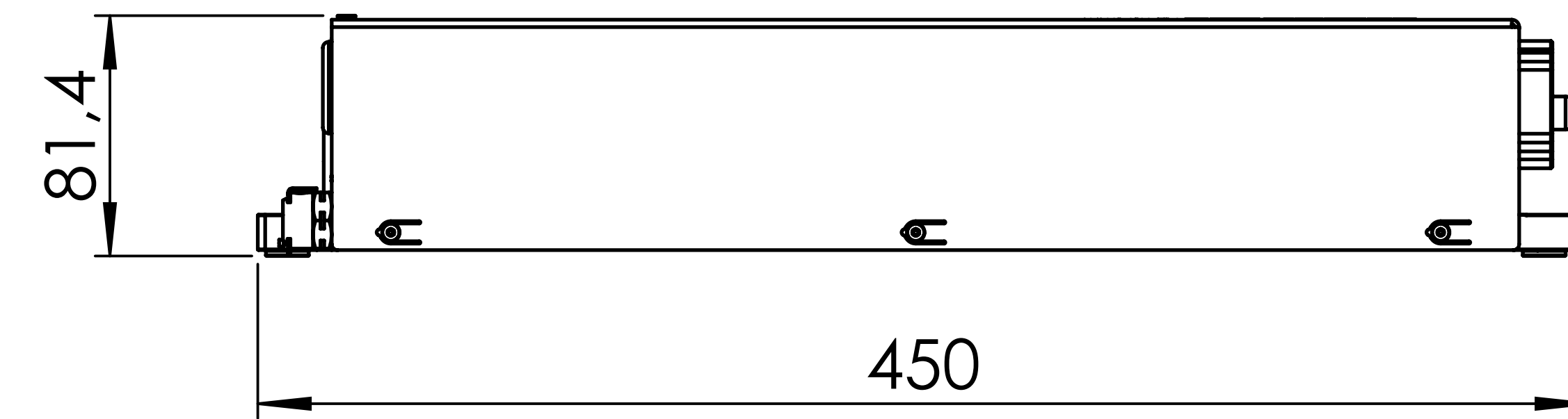
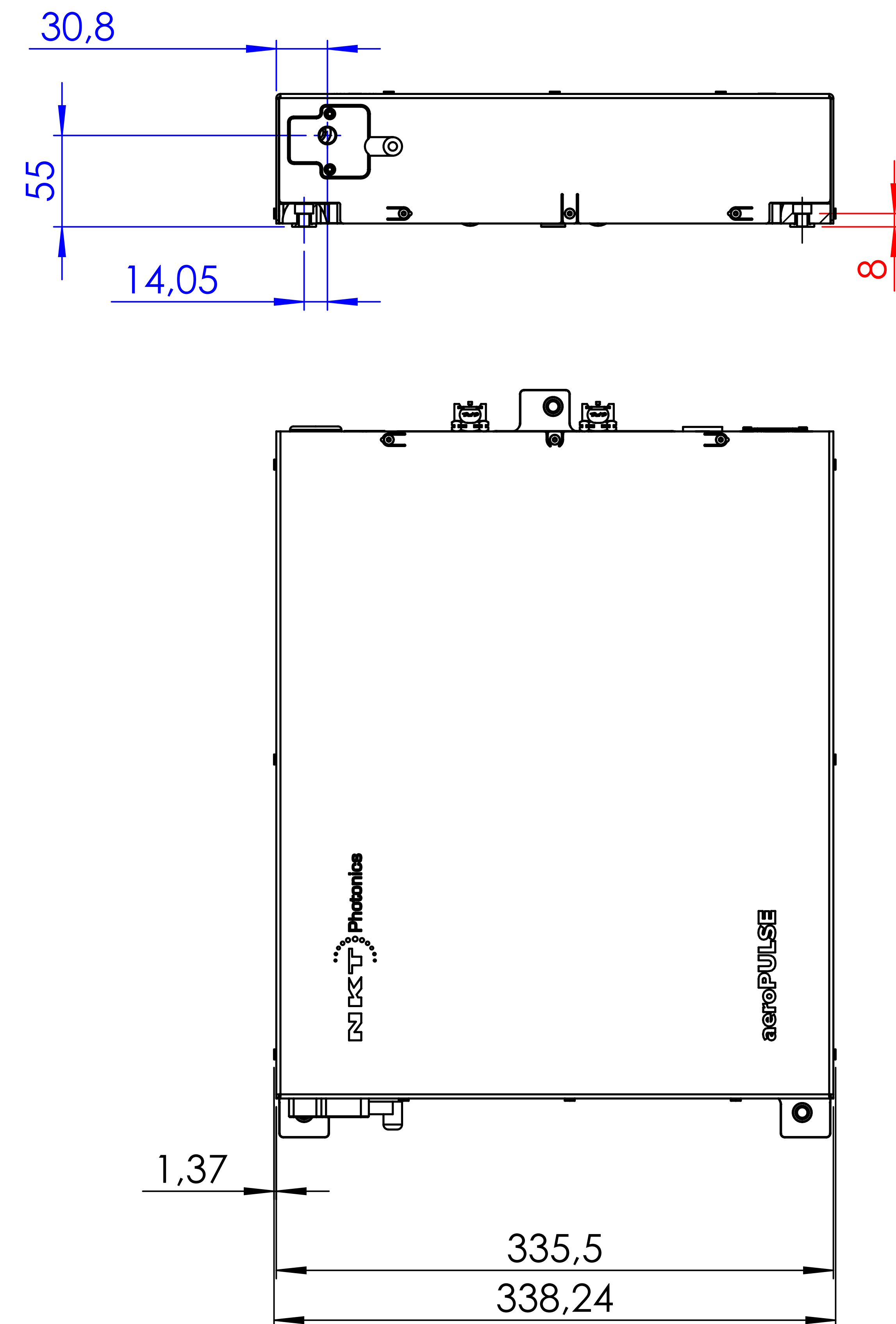
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## Mechanical/Electrical

<b>Computer interface</b>	USB 2.0, RS-232
<b>Operating voltage</b>	100-240 VAC, 50-60 Hz
<b>Power consumption [W]</b>	< 330
<b>Operation temperature [°C]</b>	18 – 30
<b>Storage temperature [°C]</b>	-10 – 60
<b>Laser head dimensions (LxHxW) [mm]</b>	450 x 80 x 336 679 x 84 x 338 (with SHG)
<b>Laser head weight [kg]</b>	10.2
<b>Controller dimensions (LxHxW) [mm]</b>	418 x 175 x 482 (4U 19" rack)
<b>Controller weight [kg]</b>	14.7
<b>Chiller dimensions (WxHxL) [mm]</b>	330 x 197 x 279 (floor stand) 432 x 177 x 438 (rack mount)
<b>Chiller weight [kg]</b>	9
<b>Cooling</b>	Water-cooling (air-cooling option for low power)

# Technical Drawings

## Laser head (IR only)



Black: External dimensions  
 Blue: Location of output beam  
 Red: Mounting

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All NKT Photonics products are produced under our quality management system certified in accordance with the ISO 9001:2015 standard.

