opus

High powered compact lasers

- 532nm up to 6W
- 660nm up to 1.5W
- 1064nm up to 10W
- Highly robust & compact
- Low noise for demanding applications

Overview

One of our most popular lasers, the **opus** is now available at 532nm, 660nm and 1064nm. Based on our patented design, the **opus** is known for its high power, excellent beam characteristics and compact size. The **opus 532** is ideally suited as a pump source for ultrafast lasers and both the **opus 532** and the **opus 660** address applications in super-resolution microscopy. The **opus 1064** offers a higher power alternative to our **ventus 1064**, the default choice for optical trapping. The diode MTTF of the **opus** lasers exceeds >100,000 hours to provide long operational lifetimes whether in a laboratory or incorporated in a fit-and-forget instrument.

The laser cavity design restricts the number of possible oscillation modes resulting in low inherent noise levels. With levels below 0.08% (fig.1&2), the **opus 532** will satisfy all but the most noise sensitive Ti:Sapp pumping applications, in a highly compact and rugged monoblock design. The **opus 1064** offers the highest IR power levels with the necessary stability and beam specification for optical tweezing and trapping applications, while the **opus 660** is the highest power 660nm DPSS laser commercially available.

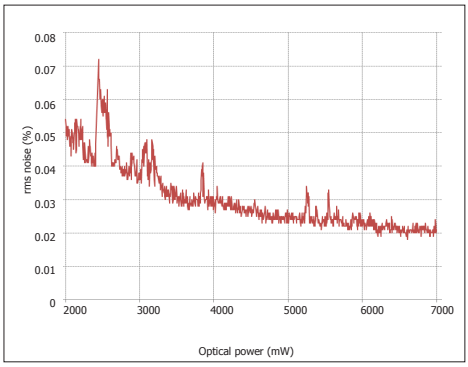


fig.1 Typical **opus 532** noise power curve showing low noise performance across the available power range.

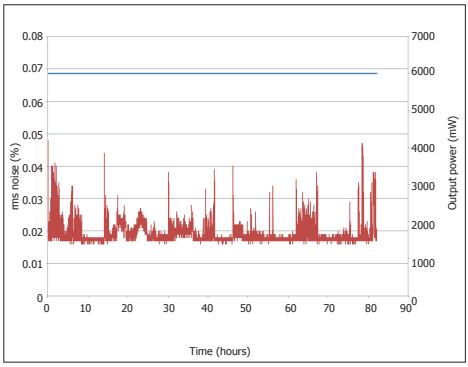


fig.2 Typical **opus 532** noise (red) and power stability (blue) test result showing noise performance well below specification and ultra-stable power output over a >80hours test.

Fibre coupling: Like most of Laser Quantum lasers, the **opus** is available with multi or single mode fibre delivery options, which allow the beam to be delivered to the point of need.

The **opus** laser range features an intelligent control unit that allows easy setting and monitoring of the laser parameters. Incorporating PowerLoQ™ technology, the **opus** lasers show extreme power stability over long periods of use (fig.2).

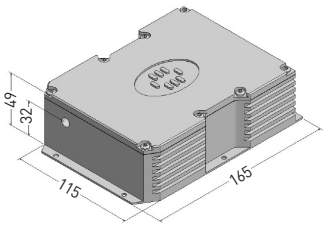
The **opus** can be controlled across the internet via the RemoteApp™ software that also allows connection to the Laser Quantum support team for monitoring laser performance, diagnosing opportunities for and carrying out laser optimisation.

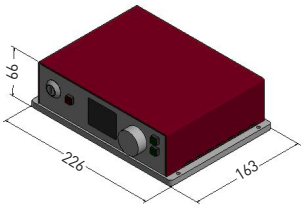
Every **opus** laser has been subjected to a 1200g drop-test to check that all components are correctly fitted prior to its extended 300 hour test period. This rigorous testing regime ensures long operational lifetimes.

opus

Laser Quantum

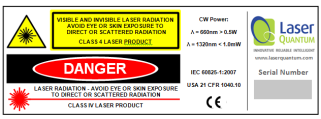
Dimensions (mm)





Other information

- Umbilical length: 1.5m
- Laser head weight: 1.5kg
- Vertical polarisation available on request
- Cooling options available
- Systems can be modulated on request
- Fibre coupling available
- LabView drivers available
- 2 years unlimited hours warranty



Drawings are for illustrative purposes only, please contact Laser Quantum for complete engineer's drawings.

Specifications*

	opus 532	opus 660	opus 1064
Wavelength	532nm	660nm	1064nm
Power	6W	1W to 1.5W	4W to 10W
Beam diameter[1]	1.85mm±0.2mm	0.85mm±0.2mm	1.85mm±0.2mm
Spatial Mode	TEM_{00}		
Ellipticity	<1:1.15		<1:1.2
Bandwidth	45±10GHz	30GHz	80GHz
Divergence	0.44±0.07mrad	<1.5mrad	<0.6mrad
M-squared	<1.1	<1.2	<1.5
Power stability[2]	<0.2% rms	<1.0% rms	
Beam pointing stability	<2µrad/°C	<10µrad/°C	<10µrad/°C
RMS noise	<0.08%	<0.6%	≤0.15%
Noise bandwidth	10Hz to 100MHz	10Hz to 50kHz	10Hz to 100MHz
Polarisation ratio	>100:1		
Polarisation direction[3]	horizontal		
Coherence length	0.7cm	~1cm	
Beam angle[4]	<1mrad		
Operating temperature	15°C to 40°C		
Warm-up time	<10 minutes		
Umbilical length	1.5m		
Applications	Ti:Sapphire pumping, Optical trapping, military applications, Super-resolution microscopy, Raman, DNA sequencing	Super-resolution microscopy, DNA sequencing, Raman, optical trapping	optical trapping/optical tweezers

* Laser Quantum operates a continuous improvement programme which can result in specifications being improved without notice.

[1] Beam diameter defined as the average of major and minor 1/e2 beam diameters measured at 20cm from exit port, at specified power.
[2] Test duration >100 hrs at constant temperature.
[3] Vertical polarisation available on request.
[4] Tolerance relative to head orientation.

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