



ventus

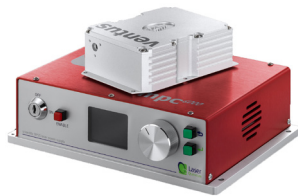
High specification scientific lasers



Laser QUANTUM

A Novanta Company

- 473 nm, 532 nm, 561 nm, 660 nm & 671 nm lasers
- Extremely low noise
- Long lifetimes
- Features PowerLoQ™ technology
- Subjected to 1200 g drop test
- Remote Connectivity



Overview

The **ventus** has become the laser of choice within the scientific community. With its compact size, robust design and low RMS noise, the **ventus** is available with powers up to 1.5 W, making it unrivalled for its size (Fig. 1). Available in a wide range of powers and multiple wavelengths, the **ventus** is used in a hugely varied range of applications, including Raman spectroscopy, optical trapping, optogenetics and fluorescence imaging, and is available with fibre-delivery with excellent noise specifications (Fig. 2). The pump diode MTTF is manufacturer-specified as >400,000 hours at full power, but Laser Quantum de-rates the diode to further increase its lifetime, giving the ventus itself industry leading lifetimes.

The **ventus** laser family is controlled by an intelligent control unit (mpc6000) that monitors, maintains and reports the calibrated optical output power and temperature of critical components. In addition to the software control, the mpc6000 provides a direct interface with the laser via an intuitive, user friendly menu displayed on an LCD screen, navigated using just two buttons and a dial. With optical feedback technology the mpc6000 can be used to control the laser in either constant power or current mode, providing the control and performance needed for many different applications.

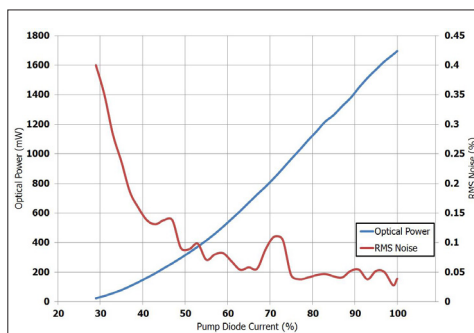


Fig. 1 Typical power curve of the **ventus** 532 nm laser, (blue) with the corresponding noise (red).

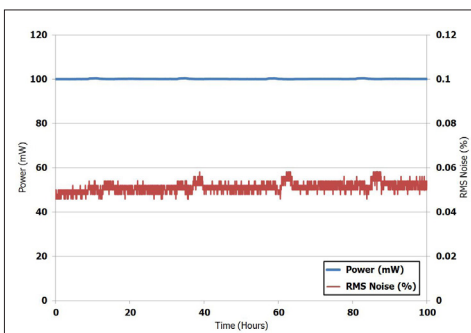


Fig. 2 Typical noise and power stability of the **ventus** 532 nm laser over 100 hours, depicting noise ~0.06 %.



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



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

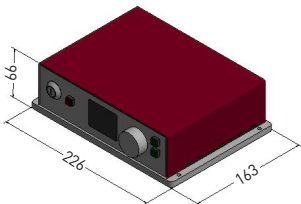
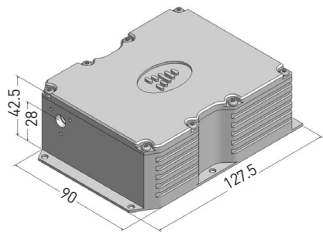


The **ventus** can be controlled across the internet via the RemoteApp™ software that also allows connection to the Laser Quantum support team for monitoring laser performance, diagnosing opportunities for and carrying out laser optimisation.



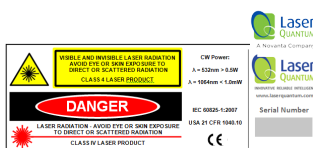
Every **ventus** laser has been subjected to a 1200 g drop-test to check that all components are correctly fitted prior to its extended 300 hour test period. This rigorous testing regime ensures long operational lifetimes.

Dimensions (mm)



Other information

- Weight: 0.75 kg
- Umbilical length: 1.5 m
- Cooling options available
- System can be modulated
- Vertical polarisation available on request
- Fibre coupling available
- LabView drivers available
- 2 years unlimited hours warranty for scientific users



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

Specifications*

	ventus 473	ventus 532	ventus solo	ventus 561	ventus 660	ventus 671
Wavelength	473 nm	532 nm	532 nm	561 nm	660 nm	671 nm
Power	50 mW to 350 mW	50 mW to 1500 mW	50 mW to 750 mW	50 mW to 350 mW	50 mW to 750 mW	50 mW to 500 mW
Beam diameter ¹	1.5 mm ± 0.1 mm	1.5 mm ± 0.1 mm	1.5 mm ± 0.1 mm	1.0 mm ± 0.2 mm	1.5 mm ± 0.1 mm	1.5 mm ± 0.1 mm
Spatial Mode	TEM00	TEM00	TEM00	TEM00	TEM00	TEM00
Ellipticity	<1:1.2	<1:1.15	<1:1.2	<1:1.2	<1:1.2	<1:1.2
Bandwidth	40 GHz	30 GHz	10 GHz	40 GHz	30 GHz	30 GHz
Divergence	≤0.6 mrad	≤0.6 mrad	<0.6 mrad	<1 mrad	<0.6 mrad	<0.6 mrad
M-Squared	<1.2	<1.1	<1.1	<1.2	<1.2	<1.2
Power stability (RMS) ²	<0.6 %	<0.4 %	<0.4 %	<1.0 %	<0.5 %	<1.0 %
Noise (RMS) ³	≤0.7 %	<0.15 %	<1 %	<1.5%	<0.5 %	<0.6 %
Noise bandwidth	10 Hz to 50 kHz	10 Hz to 100 MHz	10 Hz to 100 MHz	10 Hz to 50 kHz	10 Hz to 50 kHz	10 Hz to 50 kHz
Pointing stability	<10 urad/°C	<10 urad/°C	<10 urad/°C	>10 urad/°C	<10 urad/°C	<10 urad/°C
Polarisation ratio	>100:1	>100:1	>100:1	>100:1	>100:1	>100:1
Polarisation direction ⁴	horizontal	horizontal	horizontal	horizontal	horizontal	horizontal
Coherence length	~7.5 mm	~1 cm	~3 cm	~7.5 mm	~1 cm	~1 cm
Beam angle ⁵	<1 mrad	<1 mrad	<1 mrad	<1 mrad	<1 mrad	<1 mrad
Operating temperature	15 to 40 °C	15 to 40 °C	15 to 40 °C	15°C to 40°C	15 to 40 °C	15 to 40 °C

* 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 size measured at 25 cm from exit port, at specified power.

² Test duration >100 hrs at constant temperature.

³ ventus 532 50mW to 500 mW ≤0.4 %.

⁴ Vertical polarisation is available upon request.

⁵ Tolerance relative to head orientation.

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