# ventus

High specification scientific lasers

- 473nm, 532nm, 561nm, 660nm & 671nm lasers
- Extremely low noise
- Long lifetimes
- Features PowerLoQ™ technology
- Subjected to 1200g 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 1.5W, 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 >40,000 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.

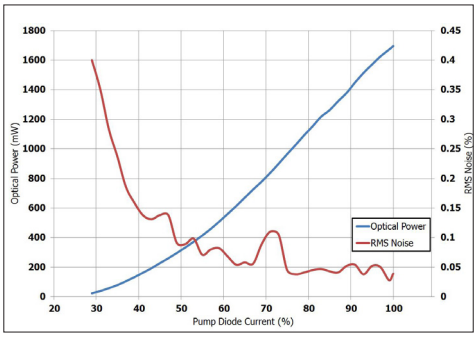



fig.1 Typical power curve of the **ventus** 532nm laser, (blue) with the corresponding noise (red).

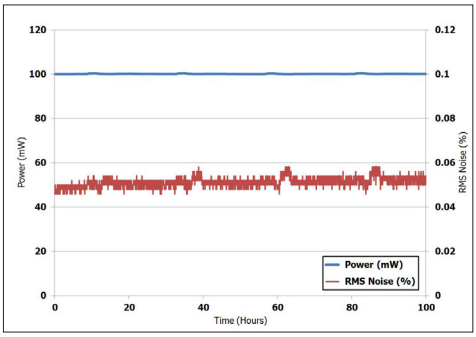



fig.2 Typical noise and power stability of the **ventus** 532nm laser over 100 hours, depicting noise ~0.06%.

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.

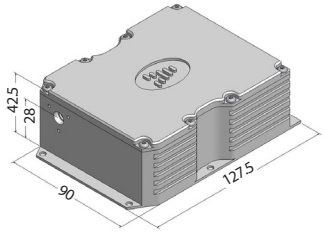
The **ventus** laser range features an intelligent control unit that allows easy setting and monitoring of the laser parameters. Incorporating PowerLoQ™ technology, the **ventus** lasers show extreme power stability over long periods of use.

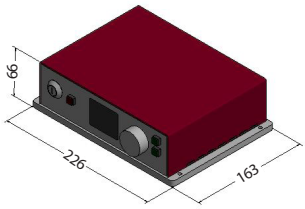
The **ventus** can be controlled across the internet via the RemoteApp™ software that also allows connection to the Laser Quantum support team for monitoring laser performance, diagnosing opportunities for and carrying out laser optimisation.

Every **ventus** laser has been subjected to a 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.

# ventus

## Dimensions (mm)




## Other information

- Weight: 0.75kg
- Umbilical length: 1.5m
- 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 561 | ventus 660 | ventus 671 | ventus solo 532 |
|---|---|---|---|---|---|---|
| Wavelength | 473nm | 532nm | 561nm | 660nm | 671nm | 532nm |
| Power | 50mW to 350mW | 50mW to 1.5W | 50mW to 350mW | 50mW to 750mW | 50mW to 500mW | 50mW to 750mW |
| Beam diameter[1] | 1.5mm±0.1mm | | | | | |
| Spatial Mode | $TEM_{00}$ | | | | | |
| Ellipticity | <1:1.2 | <1:1.15 | <1:1.2 | <1:1.2 | <1:1.2 | <1:1.2 |
| Bandwidth | <40GHz | <30GHz | <40GHz | <30GHz | <30GHz | ~10GHz |
| Divergence | <0.6mrad | ≤0.6mrad | ≤1mrad | <0.6mrad | <0.6mrad | <0.6mrad |
| M-squared | <1.2 | <1.1 | <1.2 | <1.2 | <1.2 | <1.1 |
| Power stability[2] | <0.6% rms | <0.4% rms | <1.0% rms | <0.5% rms | <1.0% rms | <0.4% rms |
| Beam pointing stability | <10µrad/°C | <10µrad/°C | <10µrad/°C | <10µrad/°C | <10µrad/°C | <10µrad/°C |
| rms noise[3] | <0.7% | <0.15% | <1.5% | <0.5% | <0.6% | ≤1% |
| Noise bandwidth | 1Hz to 50kHz | 1Hz to 100MHz | 1Hz to 50kHz | 1Hz to 50kHz | 1Hz to 50kHz | 1Hz to 100MHz |
| Polarisation ratio | >100:1 | | | | | |
| Polarisation direction[4] | horizontal | | | | | |
| Coherence length | ~7.5mm | ~1cm | <7.5mm | ~1cm | ~1cm | ~3cm |
| Beam angle[5] | <1mrad | | | | | |
| Operating temperature | 15°C to 40°C | | | | | |
| Warm-up time | 10 minutes | | | | | |
| Applications | Lithography, optogenetics, fluorescence spectroscopy | Raman and fluorescence spectroscopy | Raman and fluorescence spectroscopy, cytometry, optogenetics | Raman and fluorescence spectroscopy, biomedical imaging | Raman and fluorescence spectroscopy, biomedical imaging | Raman spectroscopy & imaging |

* 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 $1/e^2$ beam size measured at 25cm from exit port, at specified power.
[2] Test duration >100 hrs at constant temperature.
[3] **ventus** 532 50-500mW ≤0.4%.
[4] Vertical available on request
[5] Tolerance relative to head orientation.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