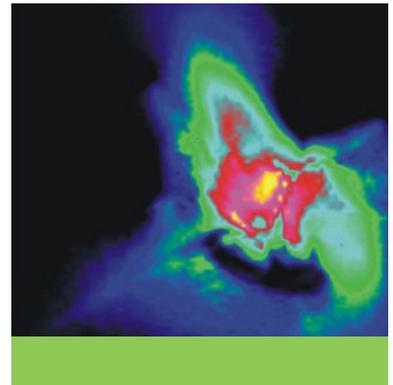


ventus

high power scientific lasers

- 473, 532, 561, 660, 671nm lasers
- Extremely low noise, high stability
- Long lifetimes
- TEM₀₀
- Internet connectivity & optimisation

TECHNICAL DATA SHEET





The high power laser of choice

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 power up to 1.5W, making it unrivalled for size for the output power in the laser market. 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. The 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.

Low Noise

Low noise results from the cavity architecture of the **ventus**, which restricts the number of oscillating modes and maintains precise control of all component temperatures. What little heat is generated within the **ventus** head is removed by conduction, so there is rarely any need for water cooling. Only high quality optical components are used, resulting in a noise specification as low as <0.15% rms over a wide operating temperature range.

Stability

The **mpc6000** power supply allows control of the **ventus** in current mode, where a percentage of maximum current can be selected or, in power mode, where an optical feedback control loop allows selection of a mW value which is maintained and stabilized to values as low as 0.4%. The temperature of all critical components is PID regulated, solidly maintaining all temperature-sensitive parameters at their optimum values. The stability is maintained over a wide operating temperature range.

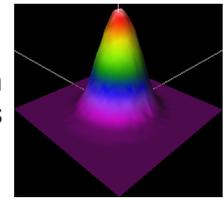
Construction

Laser Quantum builds all lasers to exacting standards, with quality the key focus of the company. The effects of shock and vibration in the **ventus** are minimized by the use of zero-stress mounts throughout the cavity, eliminating mechanical strain within the head and ensuring maximum contact with the heat sink. The **ventus** is capable of withstanding extreme shock and vibration without diminishing its performance. A Mil Spec variant of the **ventus** has been tested to temperatures below -30°C.

Prior to shipment, each **ventus** is subjected to rigorous quality assurance in line with ISO9001. The **ventus** is purged and hermetically sealed, prior to a >300 hour burn-in procedure under user realistic conditions and a 1,200 g-shock test on 5 faces. Every single unit must pass through this procedure before it is released for shipment.

Beam Quality

The typical M^2 value of the **ventus** range is <1.2 . The resulting TEM_{00} beam has $>98\%$ fit to a Gaussian profile in both the X and Y directions, with a typical ellipticity of better than 1:1.2. This beam quality is maintained across the power range of the laser.



RemoteApp™

The intelligent **RemoteApp™** software is unique to our systems, allowing complete remote access to all laser functions, either locally or through an internet connection. Additionally, our remote-service facility allows a connection to our engineers, who have the ability to monitor laser performance, diagnose opportunities for and carry out optimization tasks, all without the laser moving location and with minimal disruption to the user. This service is free of charge for the lifetime of the laser.

mpc6000 power supply and controller

The **mpc6000** controller provides an interface with the **ventus** both directly via an intuitive, user friendly menu displayed on the LCD screen, navigated using just 2 buttons and a dial, and remotely using the RS232 port. Remote use can be through simple commands from DOS or a DOS emulator, or our user friendly software simplifies this further. In addition to acting as a user interface, the **mpc6000** monitors component temperatures in the **ventus** laser head, automatically maintains laser output power and provides diagnostic analysis. It is a highly advanced, fully featured unit. Supply voltage: 100, 120, 240V AC, frequency: 47-63 Hz.

Technical 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 500mW	50mW to 750mW	50mW to 500mW	50mW to 750mW
Beam diameter ¹	1.5mm ± 0.1mm	1.5mm ± 0.1mm	1.0mm ± 0.2mm	1.5mm ± 0.1mm	1.5mm ± 0.1mm	1.5mm ± 0.1mm
Spatial Mode	TEM_{00}					
Ellipticity	$<1:1.2$	$<1:1.2$	$<1:1.2$	$<1:1.2$	$<1:1.2$	$<1:1.15$
Bandwidth	40GHz	30GHz	<40 GHz	30GHz	30GHz	≤ 10 GHz
Divergence	≤ 0.6 mrad	≤ 0.6 mrad	≤ 1 mrad	≤ 0.6 mrad	≤ 0.6 mrad	≤ 0.6 mrad
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	$<10\mu$ rad/°C	$<10\mu$ rad/°C	$<10\mu$ rad/°C	$<10\mu$ rad/°C	$<10\mu$ rad/°C	$<2\mu$ rad/°C
rms noise ³	$\leq 0.7\%$	$\leq 0.15\%$	$\leq 1.5\%$	$\leq 0.5\%$	$\leq 0.6\%$	$\leq 1\%$
Noise bandwidth	10Hz-50kHz	10Hz-100MHz	10Hz-50kHz	10Hz-50kHz	10Hz-50kHz	10Hz-6MHz
Polarisation ratio	$>100:1$					
Polarisation direction	horizontal/vertical available					
Coherence length	7.5mm	1cm	<7.5 mm	1cm	1cm	3cm
Beam angle ⁴	1mrad					
Operating temperature	10-40°C					
Warm-up time	10 minutes					
Applications	Lithography, optogenetics, fluorescence spectroscopy	Raman and fluorescence spectroscopy, Ophthalmology, PIV, DNA sequencing, Ti:Sapphire pumping, optical trapping	Raman and fluorescence spectroscopy, Cytometry, optogenetics	Raman and fluorescence spectroscopy, biomedical imaging	Raman and fluorescence spectroscopy, biomedical imaging	Raman spectroscopy

* 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 $\leq 0.4\%$.

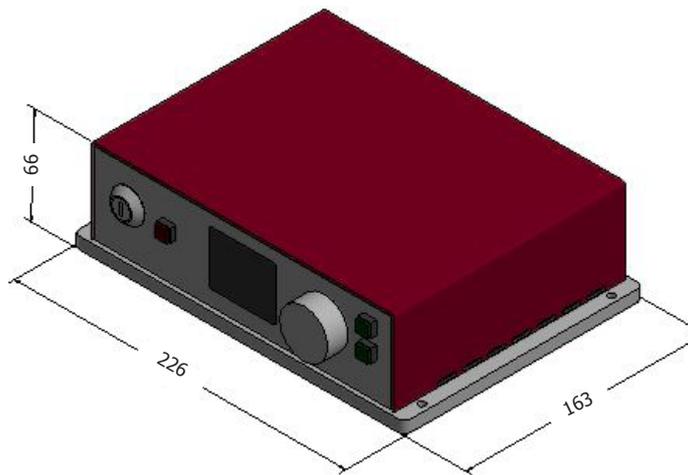
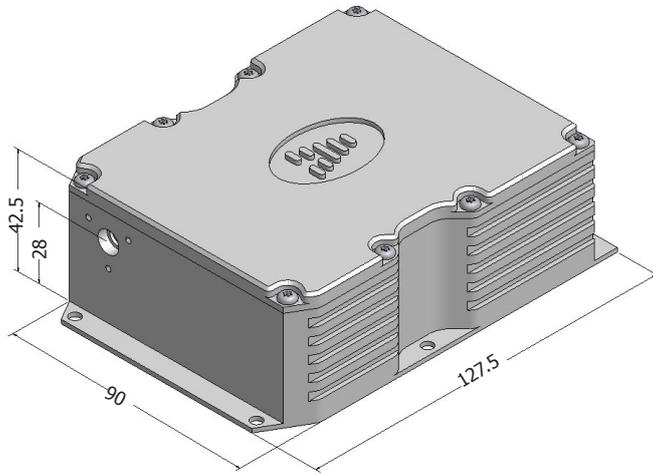
⁴ Tolerance relative to head orientation.



ventus

high power scientific lasers

Dimensions (mm)



mpc6000

Other information

- Umbilical length: 1.5m
- Laser head weight: 0.75kg
- Polarisation direction can be changed
- Cooling options available
- Systems can be modulated
- Please contact us for further details

- INNOVATIVE
- RELIABLE
- INTELLIGENT



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

LASER QUANTUM LTD

tel: +44(0) 161 975 5300
 fax: +44(0) 161 975 5309
 email: info@laserquantum.com
 web: www.laserquantum.com

LASER QUANTUM INC

tel: +1 408 467 3885
 fax: +1 408 467 3886
 email: info@laserquantum.com
 web: www.laserquantum.com

LASER QUANTUM GmbH

tel: +49 7531 368371
 fax: +49 7531 368372
 email: info@laserquantum.com
 web: www.laserquantum.com



INNOVATIVE RELIABLE INTELLIGENT

脉动科技有限公司

中国代理商

北京总部 地址: 海淀区中关村东路89号 恒兴大厦9C, 100190
 电话: 010-62565117 010-84413925
 传真: 010-62565117-11 邮箱: info@pulsepower.cn
 官网: www.pulsepower.cn

上海办事处 021-32070812
 西安办事处 029-87307077
 深圳办事处 0755-27528760