

TORUS CONTINUOUS WAVE LASER SERIES

ACTIVE MODE LOCKING, SINGLE LONGITUDINAL MODE LASER

Novanta develops photonics solutions specializing in cutting-edge components and sub-systems for laser-based diagnostic, analytical, micromachining and fine material processing applications. Powerful lasers, coupled with advanced beam steering and intelligent sub-systems incorporating software and controls, deliver extreme precision and performance, tailored to our customers' demanding applications.

LEADING LIFETIMES

Based on an ingenious virtual ring cavity design the torus family of single longitudinal mode lasers stands out for its unique spectral characteristics. A bandwidth of <1MHz and market leading spectral purity makes this laser ideal for demanding applications including Brillouin Scattering, Raman Spectroscopy, Interferometry and Holographic applications.

Advanced design characteristics include active mode locking, a technology that minimizes mode drift, eliminates mode hop and generates an ultra-stable spectral output.

* Measured by a customer and does not represent a Laser Quantum specification.

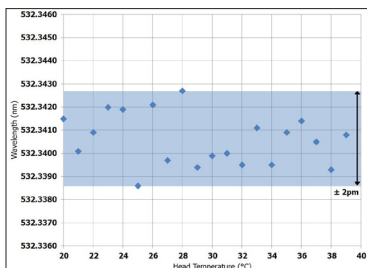


Fig. 1 Typical wavelength stability versus head temperature of torus laser.

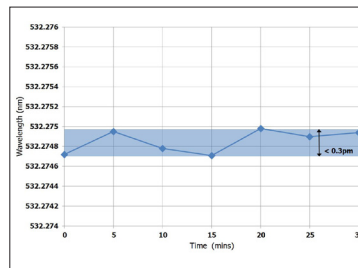
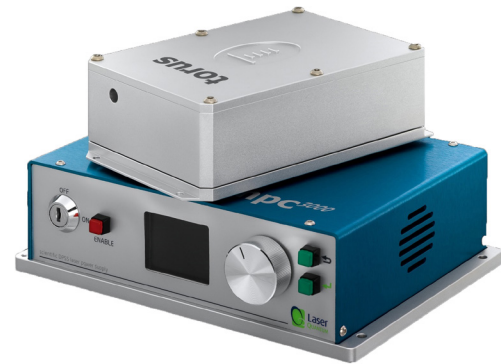


Fig. 2 Typical wavelength stability versus time of torus laser.



The torus laser with active mode-locking

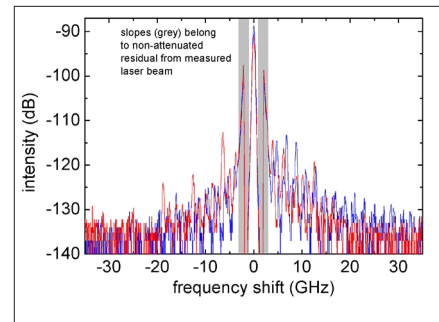


Fig. 3 High spectral purity with sidebands

UNIQUE FEATURES

High precision and high resolution in measurements

- High spectral purity with suppressed sidebands for highly accurate results
- Ultra-narrow bandwidth enables high resolution in spectroscopic applications.

Repeatable and consistent results

- Active mode locking enables highly stable spectral output resulting in consistent and repeatable results.

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| Specification* | torus 532 | torus 660 |
|--------------------------------------|-------------------|----------------|
| Wavelength | 532 nm | 660 nm |
| Power | 250 -750 mW | 150 - 200 mW |
| Beam Diameter ¹ | 1.7 ± 0.2 mm | |
| Spatial Mode | TEM ₀₀ | |
| Ellipticity | <1:1.1 | |
| Bandwidth | 1 MHz | |
| Divergence | ≤0.45 mrad | ≤0.55 mrad |
| M-Squared | <1.1 | |
| Power Stability (RMS) ² | <1.0% | |
| Noise (RMS) | <0.25% | <0.50% |
| Noise Bandwidth | 10 Hz - 100 MHz | 10 Hz - 50 kHz |
| Beam Pointing Stability ³ | <2 μrad/°C | |
| Polarization Ratio | >100:1 | |
| Polarization Direction ³ | Vertical | |
| Coherence Length | >100 m | |
| Beam Angle ⁴ | <1 mrad | |
| Operating Temperature | 15 - 35 °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.

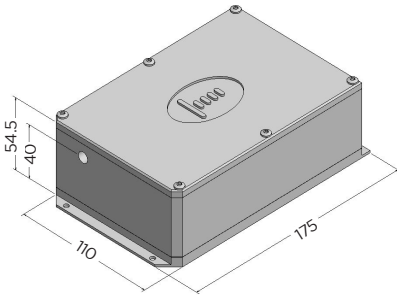
² Test duration >100 hrs at constant temperature.

³ Horizontal polarization is available upon request.

⁴ Tolerance relative to head orientation.

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DIMENSIONS (MM)



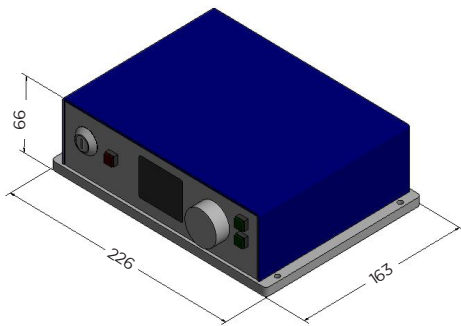
Drawings are for illustrative purposes only, please contact us for complete engineer's drawings

FLEXIBLE DESIGN

Customizable options available for your laser to optimize your application.

- **TruLoQ™:** Effects of temperature change on the laser such as mode-drift and mode-hop are minimized.
- **1200 g drop-test:** (Fig. 2) All gem lasers undergo a 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.
- **RemoteApp™:** Works with software that allows the laser to be controlled locally, over the internet and connected directly to our support team for monitoring laser performance, diagnosing opportunities and carrying out laser optimization.

POWER SUPPLY UNIT



ADDITIONAL INFORMATION

- Weight: 1.2 kg
- Umbilical length: 1.5 m
- Warm-up time: <30 minutes
- Cooling options available
- Horizontal polarization is available on request
- Fiber coupling available
- LabView drivers available
- 2 years unlimited hours warranty for scientific users

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