

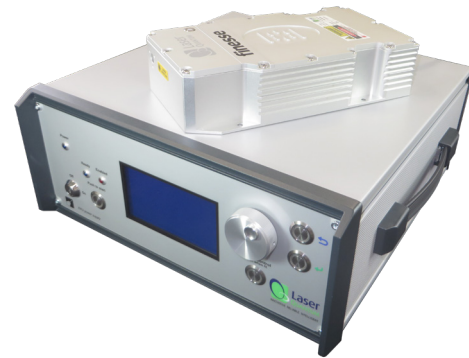
## FINESSE CONTINUOUS WAVE LASER SERIES

# ULTRA LOW NOISE AND HIGH SPECIFICATION LASERS

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.

## DESIGNED FOR SPECIFICATION

The finesse range of lasers offer top of the range performance at a high-power output of up to 16W. A novel cavity design and clever integrated electronics deliver exceptional power stability and ultra-low noise making this product ideal for the highly demanding Ti:S pumping applications whilst ensuring consistent and repeatable results for the Semiconductor inspection industry. Unique features in the form of CEP stabilization makes the finesse a perfect fit for Carrier Envelope Phase locking applications.



*The finesse laser uses pure™ technology producing <0.02 % noise*

## UNIQUE FEATURES

**Exceptional power stability and ultralow noise ensure consistent and accurate results.**

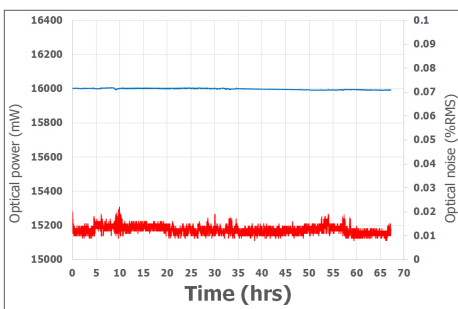
- Novel cavity design fundamentally enabling exceptionally stable power output.
- Noise cancellation electronics actively work to deliver ultralow noise.

**High power and exceptional wall plug efficiency enables applications.**

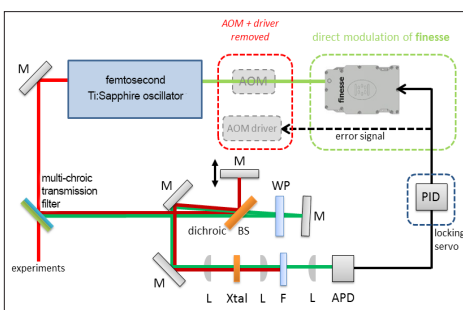
- Up to 16W of continuous wave 532nm delivers high power on sample/target
- Exceptional wall plug efficiency results in low heat dissipation and reduces thermal management requirements

**Reduce cost and complexity.**

- CEP feedback loop allows for direct modulation of output using f2f interferometer signal; removing cost and complexity from system design



*Fig. 1 Typical power and noise stability of the finesse pure laser. Power stability (blue) <0.05 % and the noise (red) ~0.01 % shown over a 70 hour period.*



*Fig. 2 finesse pure CEP removes the need for an AOM, offering simpler setup design and lower integrated CEP phase noise.*

## FINESSE CONTINUOUS WAVE LASER SERIES

Specification*	finesse 532	finesse 532 pure	finesse 532 pure CEP
Wavelength	532 nm		
Power	14 - 16 W		
Beam Diameter <sup>1</sup>	2.25 mm ± 0.25 mm		
Spatial Mode	TEM <sub>00</sub>		
Ellipticity	<1:1.15		
Bandwidth	50 GHz		
Divergence	<0.4 mrad		
M-Squared	<1.1		
Modulation Depth	N/A	N/A	± 1%
Modulation Behaviour <sup>†</sup>	N/A	N/A	<1 MHz
Phase Behaviour	N/A	N/A	~90° for 750 kHz
Power Stability (RMS) <sup>2</sup>	<0.10%	<0.100 % (<10 W) <0.050 % (10 W+)	<0.100 % (<10 W) <0.050 % (10 W+)
Noise (RMS) <sup>3</sup>	<0.1%	<0.030 % (<10 W) <0.020 % (10 W+)	<0.030 % (<10 W) <0.020 % (10 W+)
Noise Bandwidth	10 Hz - 100 MHz		
Beam Pointing Stability	<2 µrad/°C		
Polarization Ratio	>100:1		
Polarization Direction <sup>4</sup>	Horizontal		
Coherence Length	6 mm		
Beam Angle <sup>5</sup>	<1 mrad		
Operating Temperature	20 - 40 °C		

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

<sup>1</sup> Beam diameter defined as the average of major and minor 1/e<sup>2</sup> beam size measured at 25 cm from exit port, at specified power.

<sup>2</sup> Test duration >100 hrs at constant temperature.

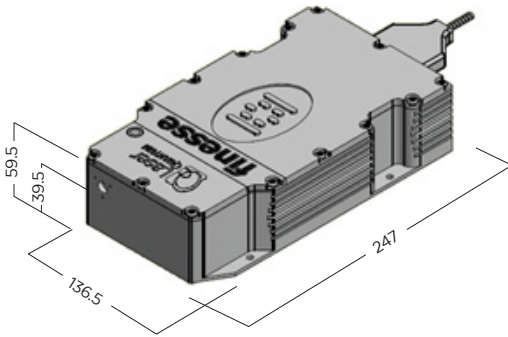
<sup>3</sup> Measured at specified power.

<sup>4</sup> Vertical polarization is available upon request.

<sup>5</sup> Tolerance relative to head orientation.

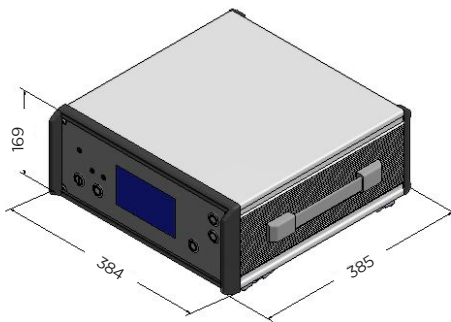
# FINESSE CONTINUOUS WAVE LASER SERIES

## DIMENSIONS (MM)



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

## POWER SUPPLY UNIT



## FLEXIBLE DESIGN

Customizable options available for your laser to optimize your application.

- **Field Replacements:** The finesse range benefits from pump diodes situated in the intelligent power controller to facilitate heat management and allows field replacement.
- **CEPLoQ™ Technology:** directly modulates the pump power to maintain phase stabilisation without the use of an AOM; faster and more stable responses than the traditional method.
- **Intelligent control unit:** Allows easy setting and monitoring of the laser parameters. Incorporating PowerLoQ™ technology, the gem lasers show extreme power stability over long periods of use.
- **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,

## ADDITIONAL

- Weight: 3 kg
- Umbilical length: 2 m
- Vertical polarization is available on request
- Capable of pumping an commercial Ti:Sapphire oscillator
- Fiber coupling available
- LabView drivers available
- 5 years/15,000 hours (PSU 'on' time) warranty for scientific users

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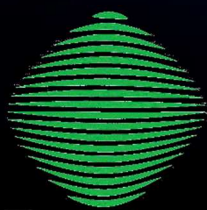
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