



finesse

The ultra quiet CW 532nm laser

- CW 532nm laser
- Extremely low noise
- Six power configurations
4, 5, 6, 7, 8 and 10W

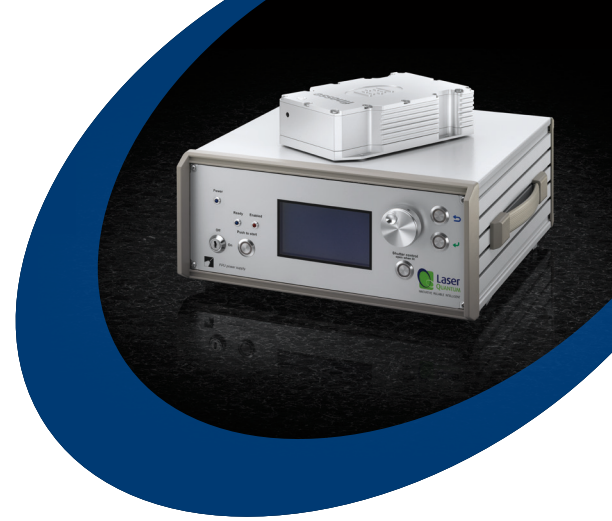
TECHNICAL DATA SHEET



INNOVATIVE RELIABLE INTELLIGENT



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Overview

The finesse is used globally and is a world leader in its class. Delivering a range of powers at 532nm, continuous-wave, and with the diode fibre-coupled to the laser head, the laser is small, efficient and does not require water-cooling to operate. These features, combined with noise < 0.15% rms and $M^2 < 1.1$, make the finesse an ideal OEM laser or research tool.

Low Noise

The finesse's pump diode is housed within the power supply and fibre-coupled to the laser head. Thus, thermal effects within the head are minimised. What little heat is generated within the head is removed by conduction - there is no fan or water-cooling required. Only high quality optical components are used, resulting in a noise specification of < 0.15% rms over a wide operating temperature range.

Stability

The fpu power supply is a highly intelligent and functional control unit. It allows the laser to be operated in power or current mode; in power mode the output power is stabilised to better than 0.1% using optical feedback to the laser head.

The temperature of all critical components, and of the housing itself, is regulated by PID temperature controllers, solidly maintaining all temperature-sensitive parameters within the cavity at their optimum values.

Construction

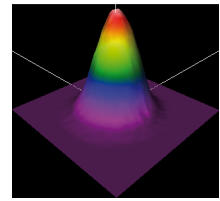
Laser Quantum builds all lasers to a high standard, and the finesse is no exception.

The effects of shock impacts are minimised by the use of zero-stress mounts throughout the cavity, and the laser's feet are engineered to deform under high stress, eliminating mechanical strain within the head. The finesse is capable of withstanding extreme vibrational shocks without diminishing its performance.

Before shipment each finesse is subjected to rigorous quality assurance, in line with ISO9001. Every unit is N2 purged and hermetically sealed. There follows a rigorous burn-in procedure under user-realistic conditions.

Beam Quality

The typical M-squared value of the finesse beam is <1.1. The resulting TEM₀₀ beam has >98% fit to a Gaussian profile in both the X and Y directions, with an ellipticity typically of 1:1.05.



The finesse is directed towards ultrafast applications as an easily integrable pump-source. However, the high specification and quality that the femtosecond market demands make this laser suitable for many research applications and industrial and military purposes.

RemoteCal™ Diagnostics and RemoteVu™

The intelligent RemoteCal feature is unique to our systems, allowing complete remote access to the laser via the Internet. It is capable of running diagnostics and controlling the laser when installed in the final application - and even performing minor services - with minimal disruption to the customer. The RemoteVu software suite is a user friendly Windows-based interface used in partnership with RemoteCal or independently.

fpu finesse power supply and controller

The fpu35 and fpu60 (finesse 8 and 10 only) are more than just a power supply, they are an integral part of the finesse laser system. The fpu houses the diode and fibre assembly, monitors component temperatures in the laser head, automatically maintains laser output power and provides diagnostic analysis. It is a highly advanced, fully featured unit.

Supply voltage: 100, 120, 240 AC, frequency: 47 - 63 Hz

Features include: RS232 control, power feedback control, large LCD, silent operation, compact and low-profile design.

Technical Specifications*

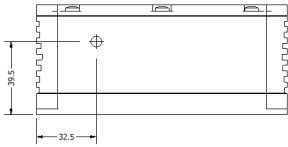
	FINESSE 4	FINESSE 5	FINESSE 6	FINESSE 7	FINESSE 8	FINESSE 10
Power	4 Watts	5 watts	6 watts	7 watts	8 watts	10 watts
Wavelength	532nm	532nm	532nm	532nm	532nm	532nm
Beam size	2.25mm +/- 0.25mm	2.25mm +/- 0.25mm	2.25mm +/- 0.25mm	2.25mm +/- 0.25mm	2.25mm +/- 0.25mm	2.25mm +/- 0.25mm
Spacial mode	TEM ₀₀	TEM ₀₀	TEM ₀₀	TEM ₀₀	TEM ₀₀	TEM ₀₀
Ellipticity	1:1.1	1:1.1	1:1.1	1:1.1	1:1.15	1:1.15
Bandwidth	50 GHz	50 GHz	50 GHz	50 GHz	50 GHz	50 GHz
Divergence	0.4 mrad	0.4 mrad	0.4 mrad	0.4 mrad	0.4 mrad	0.4 mrad
M-squared	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Power stability ¹	< 0.1%	< 0.1%	< 0.1%	< 0.1%	< 0.1%	< 0.1%
Beam pointing stability	< 2 urads	< 2 urads	< 2 urads	< 2 urads	< 2 urads	< 2 urads
Rms noise ²	< 0.15%	< 0.15%	< 0.15%	< 0.15%	< 0.15%	< 0.15%
Noise bandwidth	1Hz to 6MHz	1Hz to 6MHz	1Hz to 6MHz	1Hz to 6MHz	1Hz to 6MHz	1Hz to 6MHz
Polarisation ratio	100:1	100:1	100:1	100:1	100:1	100:1
Coherence length	6mm	6mm	6mm	6mm	6mm	6mm
Beam angle ³	1 mrad	1 mrad	1 mrad	1 mrad	1 mrad	1 mrad
Operating temperature	25 - 40 deg C	25 - 40 deg C	25 - 40 deg C	25 - 40 deg C	25 - 40 deg C	25 - 40 deg C
Head weight	2.5 kg	2.5 kg	2.5 kg	2.5 kg	2.5 kg	2.5 kg
Umbilical length	2m	2m	2m	2m	2m	2m
Warm-up time	10 min	10 min	10 min	10 min	10 min	10 min

+ Subject to change without notice. ¹ Test duration >100 hrs. ² Measured at specified power. ³ Tolerance relative to head orientation.

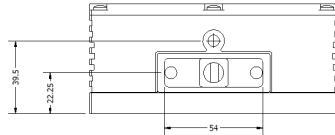
Dimensions



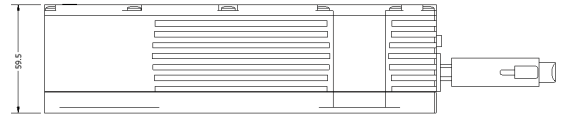
Front view



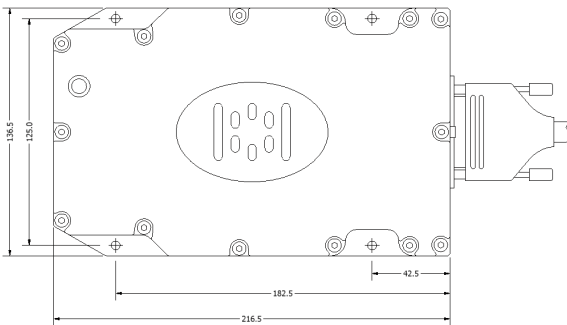
Back view



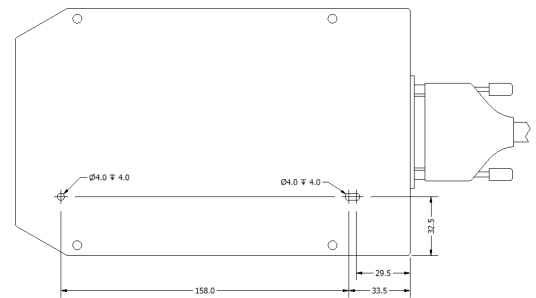
Side view



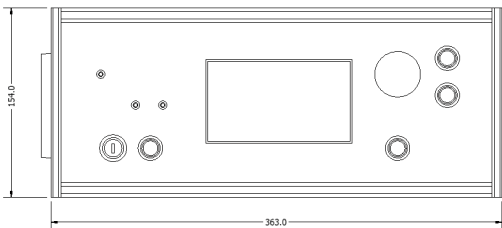
Top view



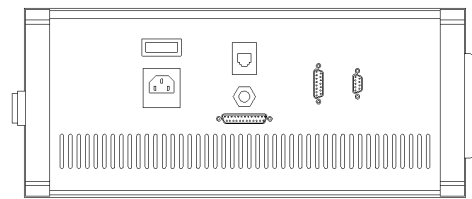
Bottom view



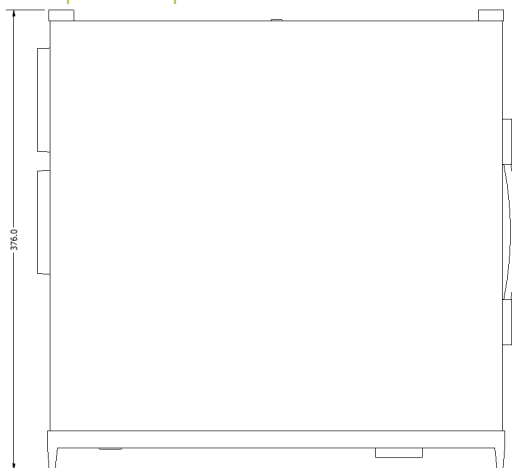
fpu - front view



fpu - side view



fpu - top view



Typical Applications

- femtosecond/CW Ti: Sapphire pumping
- ITO marking/etching
- biomedical imaging



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

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