axiom 660

Integrated, high power CW laser

Laser QUANTUM
A Novanta Company

- Continuous wave 660 nm laser
- Market-leading power up to 6 W
- Integrated diode-in-head
- Extremely compact power supply unit

Overview

The **axiom 660** laser is a new architecture that delivers high CW power whilst incorporating all of the active optics within the laser head. This design lends itself to easy integration into equipment, without the complexities associated with fibre delivery of the pump light. The **axiom** is a high power red laser providing a market-leading output of 6 W at 660 nm with excellent noise and stability. Along with its ultra-compact power supply unit, it forms a small-scale laser system ideal for Raman imaging, particle image velocity (PIV) and fluorescence imaging. The **axiom** design features our innovative stress-free cavity architecture. It has excellent beam characteristics and a power stability of <1.0% RMS.

Applications

The **axiom 660** is suitable for a range of applications, particularly PIV, Raman imaging and a wide range of fluorescence imaging techniques. PIV is an optical technique used to visualise flow and direction of a fluid. The high power intensity, and the ability to shape the beam, enables a 2-dimensional light sheet to be created and form a canvas of the image. Therefore, a high powered 660 nm laser, such as the **axiom** with power up to 6 W, will enable visualisation of a larger flow cross-section or a brighter image. Also, the excellent beam pointing stability of the **axiom** minimises any corruption of velocity tracking within the light sheet.

The **axiom** can also be used for Raman imaging, generating detailed chemical images (see figure 1) based on a sample's Raman spectrum. The wavelength of 660 nm is commonly used for Raman spectroscopy and the high power allows imaging of Raman emission over a large area, not possible with lower powers. With its high power, excellent beam characteristics and size, the **axiom 660** addresses several fluorescent dyes including Atto 647N and Atto 655 for fluorescence imaging and super resolution microscopy.

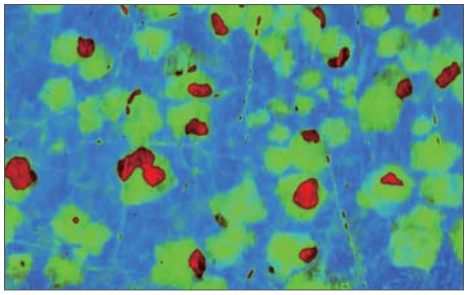

Figure 1. Hyperspectral Raman image of monolayer graphene with bilayer islands produced by chemical vapour deposition on copper substrate. Data obtained with Photon etc's RIMA system Courtesy of Prof. Richard Martel, Department of Chemistry, University of Montreal.

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

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

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Integrated diode pump in head laser

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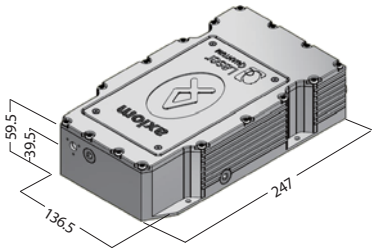
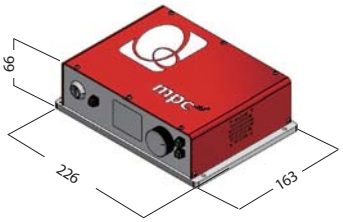
Dimensions (mm)





Other information

- Umbilical length: 1.5 m
- Laser head weight: 3.96 kg
- LabView drivers available
- Cooled via internal water channels

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

Specifications*

	axiom 660
Power	3 – 6 W
Spectral bandwidth	<50 GHz
Power stability	<1.0% RMS
Pointing stability	<10 µrad/°C
M^2	<1.2
Beam diameter	0.85 mm ± 0.2 mm
Polarisation direction	Horizontal
Operating temperature	20 - 29°C
Umbilical length	1.5 m
Laser class	Class IV
Wavelength	660
Coherence length	~6 mm
Noise	<1% RMS
Spatial mode	TEM00
Divergence	<1.6 mrad
Polarisation ratio	>100:1
Beam angle	<1 mrad
Weight	3.96 kg
Warmup	<10 minutes

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

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