

# XTRA II

Single-Frequency High Power Diode Laser

## XTRA II

Supporting High-Resolution Raman Applications

### Your Demand

High resolution Raman microscopy requires lasers with three key features:

- Highest output power for optimized Raman signal
- Narrow linewidth for high spectral resolution
- TEM<sub>00</sub> beam for high spatial resolution

Moreover, an extreme long-term wavelength stability is a must to analyze larger areas on a specimen. High ASE suppression and circular beam profile finally complement the specification sheet for a perfect light source in Raman applications.

### Our Solution

The XTRA II meets all these demands, providing 500 mW at 785 nm in a TEM<sub>00</sub> beam with single-frequency performance (linewidth < 10 MHz). With its ASE suppression of more than 40 dB the XTRA II supports the important signal-to-noise discrimination. The optimized optical design of the XTRA II incorporates 'pro' technology, a proprietary resonator design, proven in the most demanding scientific applications for many years. Designed especially for Raman microscopy and spectroscopy, it serves as a hands-off operation module with RS 232 access over all relevant laser parameters.

### Extra Benefits

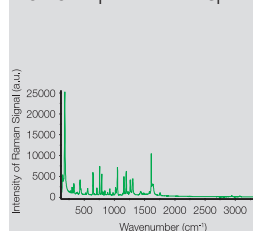
Many lasers suffer from optical feedback and subsequently mode-hops or power fluctuations. The XTRA II avoids such drawbacks by using an integrated optical isolator with 35 dB isolation (60 dB version optional). The new laser design separates the control electronics from the optical laser head. Combined with the separate power supply, the heat generation inside the optical assembly is reduced to a minimum, which leads to an extremely stable operation. Active thermal stabilization of the laser diode ensures constant lasing condition and supports high wavelength and power stability.

### Fiber Option

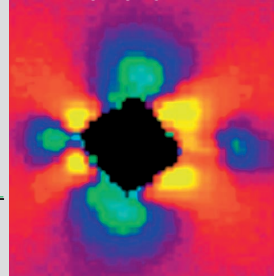
To provide full flexibility for OEM integrators, single-mode fiber-coupling is a standard option. Contrary to competing multimode lasers, the XTRA II achieves more than 250 mW output from a single-mode polarization-maintaining fiber. The fiber add-on consists of TOPTICA's patented FiberDock and the 60 dB isolator option. Thus, highest coupling efficiency combined with best wavelength stability is guaranteed.



Raman Spectrum / Aspirin®



Confocal Raman / Silicon



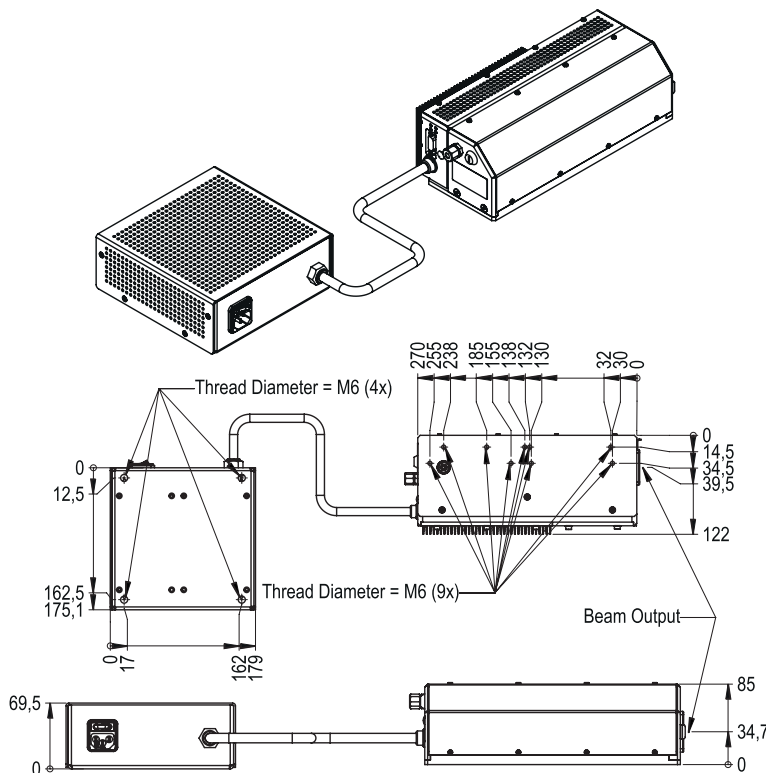
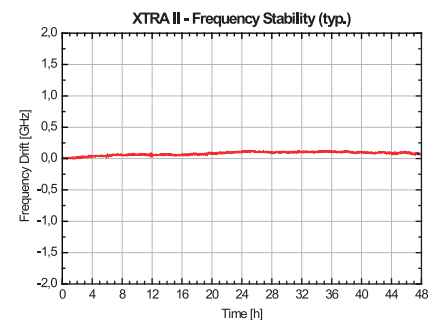
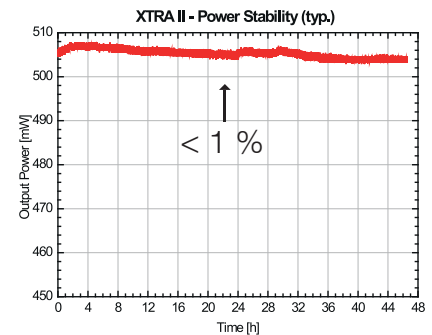
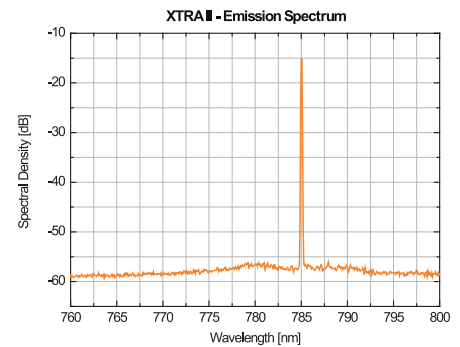
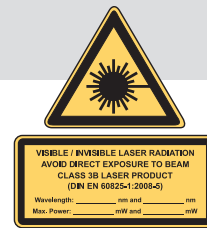
### Applications

- Raman microscopy / spectroscopy
- Drug screening
- Chemical process control

# XTRA II

## Specifications

	Free-beam	Fiber coupled
Power	Up to 500 mW	250 mW (SM)
Available wavelength	785 nm, or customer specified	
Wavelength precision	$\pm 0.08$ nm	
Spectral linewidth	< 10 MHz	
Long term frequency drift (10 h)	$\ll 1$ cm <sup>-1</sup> / 30 GHz	
Long term power drift (10 h)	< 5 %	
ASE suppression	> 40 dB	
Optical isolation (internal)	35 dB / 60 dB (optional)	
Beam diameter (1/e <sup>2</sup> ) (typ.)	2.2 mm	-
Beam divergence	< 1.0 mrad	Fiber dependent
Spatial mode	TEM <sub>00</sub>	Fiber dependent
M <sup>2</sup>	< 1.7	Fiber dependent
Focusability	< 1 $\mu$ m (depending on optics)	
Output polarization	Linear, typ. 500:1, 45° clockwise with respect to base plate	
Warm-up time	Approx. 5 min	
Operating voltage	90 - 260 VAC	
Power consumption	< 65 W	
Operating temperature range	15 .. 35 °C	
Operating relative humidity	< 90 % non condensing	
Weight (laser head + power supply)	5.3 kg (2.9 kg + 2.4 kg)	



All dimensions given in mm

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