INDUSTRY

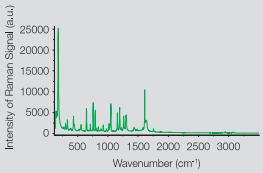
XTRA

Single-Mode | Single Frequency | Tunable

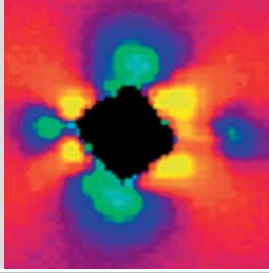
XTRA

Supporting High-Resolution Raman Applications

Raman Spectrum / Aspirin®



Confocal Raman / Silicon



Applications

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

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_{00} beam for high spatial resolution

Moreover, an extremely 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 meets all these demands, providing 500 mW at 785 nm in a TEM_{00} beam with single-frequency performance (linewidth < 10 MHz). With its ASE suppression of more than 40 dB the XTRA supports the important signal-to-noise discrimination. 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 avoids such drawbacks by using an integrated optical isolator with 35 dB optical isolation.
Consisting of a compact laser head and a separate power supply, the heat generation inside the laser head is reduced to a minimum, which in turn leads to a stable operation. Active thermal stabilization of the laser diode ensures constant lasing condition and supports high wavelength and power stability. Last not least, standard interlock circuits complement the XTRA's appropriateness for OEM integration.

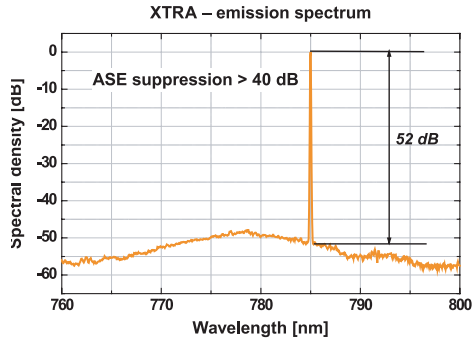
Fiber Option

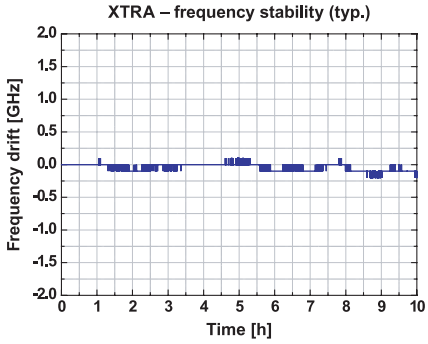
To provide full flexibility for OEM integrators, single-mode fiber-coupling is available on demand. Contrary to competing multimode lasers, the XTRA achieves 250 mW output from a single-mode or even polarization-maintaining fiber. The fiber add-on consists of TOPTICA's patented FiberDock and an additional 35 dB optical isolator. Thus, highest coupling efficiency combined with best wavelength stability is guaranteed.

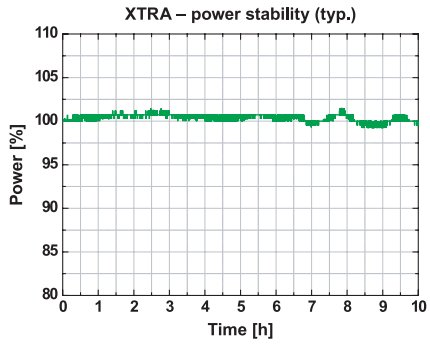
TOPTICA PHOTONICS

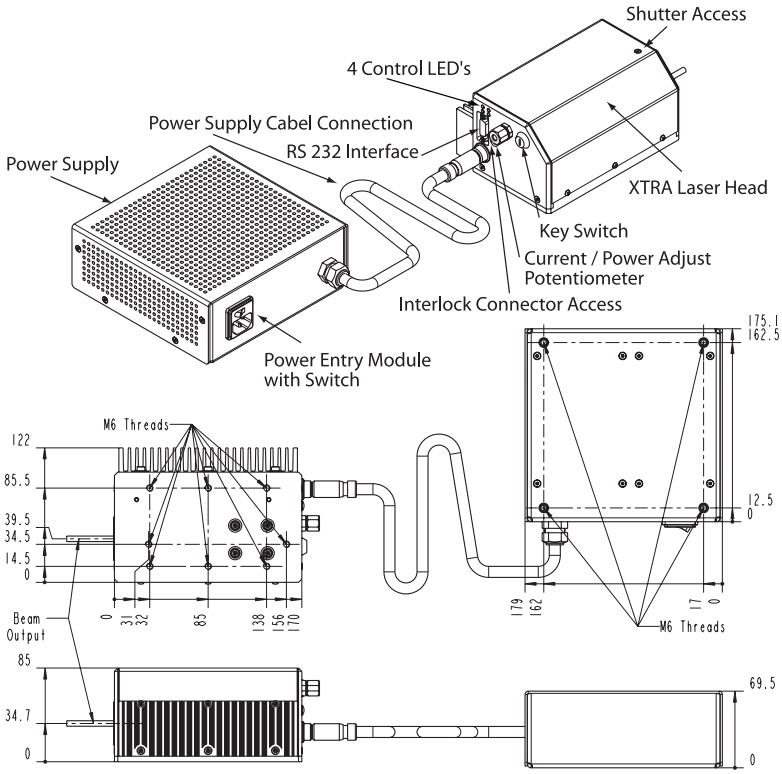
XTRA

Specifications		
	Free-beam	**Fiber coupled**
Power	Up to 500 mW	250 mW (SM)
Available wavelength	785 nm, or customer specified	
Wavelength precision	+- 0.08 nm	
Spectral linewidth	< 10 MHz	
Long term frequency drift (10 h)	<< 1 cm^{-1} / 30 GHz	
Long term power drift (10 h)	< 5 %	
ASE suppression	> 40 dB	
Optical isolation	35 dB (internal)	
Beam diameter ($1/e^2$) (typ.)	2.2 mm	-
Beam divergence	< 1.0 mrad	Fiber dependent
Spatial mode	TEM_{00}	Fiber dependent
M^2	< 1.7	Fiber dependent
Focusability	< 1 µm (depending on optics)	
Output polarization	Linear, typ. 500:1, 45° clockwise with repect to base plate	
Warm-up time	Approx. 5 min	
Operating voltage	90 - 260 VAC	
Power consumption	< 45 W	
Operating temperature range	15 .. 35 °C	
Operating relative humidity	< 90 % non condensing	
Weight (laser head + power supply)	4.7 kg (2.3 kg + 2.4 kg)	









All dimensions given in mm

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LGA InterCert Certified Quality System ISO 9001:2000