

OXIDE Deep-UV Single Frequency Lasers

OXIDE's Frequad series is a collection of continuous wave (CW) single frequency deep-UV lasers, built from the outcome of combining OXIDE's wavelength conversion technology, nonlinear crystal technology and unique high-speed, precision voice coil motor (VCM) laser, thereby enabling stable operation of CW. The original Frequad lasers (Frequad-HP, Frequad-M, Frequad-C) has a successful history of over 20 years, and the new additions (Frequad-M57, Frequad-W) are extensions of this series.

Sintec Optronics is OXIDE's appointed distributor.

1. Frequad CW 266nm DUV Lasers

Features

- Ultra-high purity BBO crystal:
 - The outstanding quality of OXIDE's own BBO crystal provides over 3000 hours single-spot lifetime at 1W output power, and over 1000 hours at 2W. Furthermore, the little deterioration of the crystal assures stable operation for a long period of time at high beam quality.
- Sophisticated servo lock technology:
 - OXIDE's unique high-speed, high-precision voice coil motor (VCM) servo actuator offers stable CW operation of laser.
- Low power consumption:
 - The highly efficient wavelength conversion laser system realized extremely low power consumption – less than 340W.

Applications

- Semiconductor inspection
- Raman spectroscopy
- Photoluminescence
- Disk mastering
- Fiber bragg grating writing

Model	Frequad-HP FQ50-20/-10	Frequad-M FQM-20/-10/07/-05/-03	Frequad-C FQC-50/-20
			
Wavelength	266nm	266nm	266nm
Output Power	2.0 / 1.0W	2.0 / 1.0 / 0.7 / 0.5 / 0.3W	50 / 20mW
Linewidth	<0.005pm	<0.005pm	<0.005pm
Power Stability	< +/-1 %/8 hrs	< +/-1 %/8 hrs	< +/-3 %/8 hrs
Extinction Ratio	>100:1	>100:1	>100:1
Beam Quality	TEM ₀₀ , M ² < 1.2	TEM ₀₀ , M ² < 1.2	TEM ₀₀ , M ² < 1.3
Polarization	Vertical, Linear	Vertical, Linear	Vertical, Linear
Beam Diameter	3mm ± 0.3mm	3mm ± 0.3mm	0.8mm ± 0.2mm
Divergence (1/e ²)	<0.2mrad	<0.2mrad	<0.4mrad
Power Supply	AC100-240V, 50/60Hz	AC100-240V, 50/60Hz	AC100-240V, 50/60Hz
Power Consumption	<300W	<340W (<400W for 2W model)	<70W
Cooling	Air	Water	Air
Dimensions (Head)	240 x 840 x 160mm	350 x 590 x 124mm	153 x 202 x 79mm

2. Frequad-M57 CW 257.5nm DUV Laser

OXIDE's Frequad-M57 laser is a continuous wave (CW) single frequency deep UV 257.5nm laser. Since its wavelength is the same as the second harmonic (SHG) of argon ion lasers, which are gas lasers, the M57 laser is designed for existing users of gas lasers or for new users of this wavelength without the ease of operation and maintenance. It is not only stable but is also highly reliable. Thus, it will reduce maintenance frequency and running costs when used in photo lithography equipment, inspection tools, and site flow meters.



Features

- Ultra-high purity BBO crystal:
 - The outstanding quality of OXIDE's proprietary BBO crystals enables the system to operate for more than 3000 hours at 0.3-1 W output power as a device. The high beam quality guarantees stable operation for a long period of time by virtue of minimal crystal degradation.
- Sophisticated servo lock technology:
 - OXIDE's unique high-speed, high-precision voice coil motor (VCM) servo actuator offers stable CW operation of laser.
- Low power consumption:
 - The highly efficient wavelength conversion laser system realized extremely low power consumption – less than 340W.

Applications

- Semiconductor inspection and photo lithography equipment
- Raman spectroscopy, photoelectron spectroscopy
- Photoluminescence
- Disk mastering
- Fiber Bragg grating fabrication
- Biotechnology

Specification	Value
Wavelength	257.5nm
Output Power	1.0, 0.7, 0.5, 0.3W
Linewidth	<0.005pm
Extinction Ratio	>100:1
Beam Quality	TEM ₀₀ , M ² < 1.3
Polarization	Vertical, Linear
Power Supply	AC100-240V, 50/60Hz
Power Consumption	<340W
Cooling	Water
Dimensions (Head)	350 x 590 x 124mm

3. Frequad-W CW 213nm DUV Laser

OXIDE's Frequad-W laser is a continuous wave (CW) single frequency deep UV 213nm laser. This laser has the shortest wavelength among our continuous wave lasers and is suited not only for scientific and technological applications such as photoelectron spectroscopy, but also for industrial applications due to its high reliability.



Features

- Ultra-high purity BBO crystal:
 - The outstanding quality of OXIDE's proprietary BBO crystals enables the system to operate for more than 3000 hours at 10 mW or 20 mW output power as a device. The high beam quality guarantees stable operation for a long period of time by virtue of minimal crystal degradation.
- Sophisticated servo lock technology:
 - OXIDE's unique high-speed, high-precision voice coil motor (VCM) servo actuator offers stable CW operation of laser.
- Low power consumption:
 - The highly efficient wavelength conversion laser system realized extremely low power consumption – less than 340W.

Applications

- Semiconductor inspection and photo lithography equipment
- Raman spectroscopy, photoelectron spectroscopy
- Photoluminescence
- Disk mastering
- Fiber Bragg grating fabrication
- Biotechnology

Specification	Value
Wavelength	213nm
Output Power	20mW, 10mW
Linewidth	<0.005pm
Extinction Ratio	>100:1
Beam Quality	TEM ₀₀
Polarization	Vertical, Linear
Power Supply	AC100-240V, 50/60Hz
Power Consumption	<300W
Cooling	Air-cooled
Dimensions (Head)	240 x 840 x 160mm

4. CW 236.5nm DUV Laser – Prototype Available!

Applications

- Semiconduction inspection
- Photoluminescence analysis
- UV Raman spectroscopy

Specification	Value
Wavelength	236.5nm
Output Power	10mW
Linewidth	<0.005pm
Extinction Ratio	>100:1
Beam Quality	TEM ₀₀ , M ² < 1.3
Polarization	Vertical, Linear
Power Supply	AC100-240V, 50/60Hz
Power Consumption	<340W
Cooling	No water cooling, no air supply
Dimensions (Head)	TBC