



INDIGO-DUV

Indigo™-DUV is the first all solid-state, single-frequency, 193 nm laser designed for optical metrology and calibration of 193 nm lithography stepper lenses and deep-UV spectrometers.

Indigo-DUV offers the user a solid-state alternative to unreliable off-wavelength lasers, and costly excimer laser modifications. Delivering >2mW of single-frequency radiation in a TEM₀₀ spatial mode at 5 kHz, Indigo-DUV also offers the frequency control, narrow linewidth, long coherence length, and outstanding stability required for 193 nm metrology.

The design includes a Ti:Sapphire oscillator, pumped by our Evolution laser, and a fourth-harmonic frequency conversion package. The injection-seeded Ti:Sapphire oscillator produces near transform-limited linewidths for the 40 ns, 772 nm output. A kilohertz closed-loop control circuit optimizes injection-seeded performance, resulting in a time-averaged linewidth of < 1.5 transform limit for typical interferometer measurement times.

A high-precision wavelength control option is available, controlling the

wavelength accuracy to <1 pm, and resolution to <0.1 pm, with a computer-controlled tuning range of ± 50 pm.

The diode-pumped Nd:YLF Evolution pump laser provides outstanding energy stability (<1% RMS fluctuation), resulting in a stability of <3% RMS in the deep UV.

A proprietary harmonics package converts the 772 nm to the fourth harmonic, 193 nm. The design of the harmonics package has been optimized for conversion efficiency and output power, while maintaining a high-quality TEM₀₀ spatial mode.

Complete with computer control and a closed-loop chiller, Indigo-DUV operates on 110/220 VAC and requires only a low-flow nitrogen purge.

The single-frequency performance of the Indigo-DUV provides the long coherence length required for stepper-optic optical metrology. Precision wavelength control and ± 50 pm tunability allow for accurate mapping of the chromatic sensitivity of complex lens systems.

**Solid-State,
Single Frequency,
193 nm Laser**

FEATURES

- *All solid-state design*
- *Narrow linewidth*
- *Long coherence length*
- *Precision wavelength control*
- *TEM₀₀ beam profile*
- *Stable (<3% RMS) at deep UV wavelengths*

KEY APPLICATIONS

- *193 nm Metrology*
- *Spectrometer Calibration*
- *Interferometry*

193 nm Beam Profile



Indigo-DUV



Indigo-DUV

Solid-State, Single Frequency, 193 nm Laser

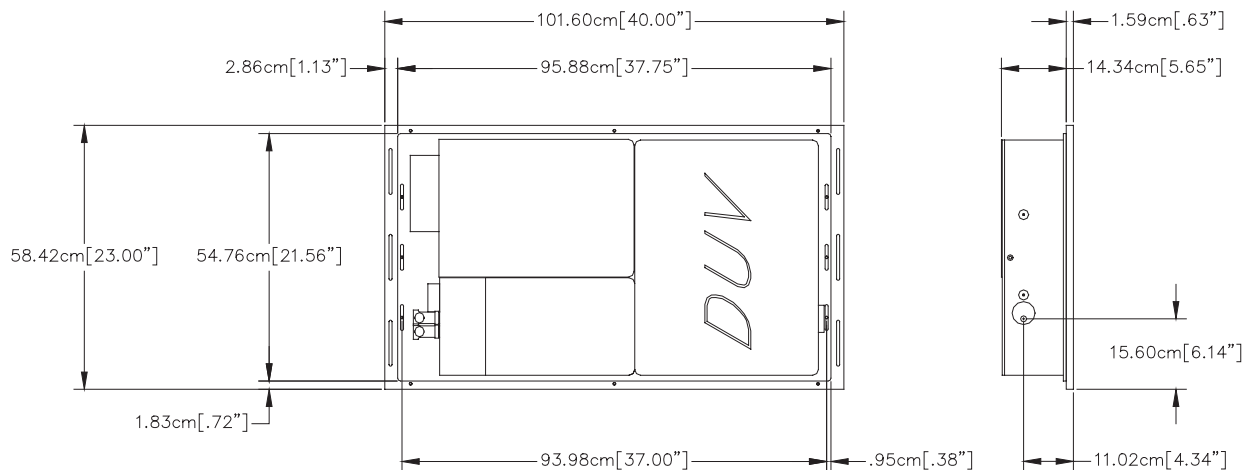
System Specifications

	Indigo-DUV
Wavelength ¹	193 nm
Repetition Rate	5 kHz
Power	>2 mW
Coherence Length ²	>3 meters
Spatial Mode	TEM ₀₀
Single-Shot Linewidth	<0.006 pm
Time Averaged Linewidth, 2 seconds	<0.04 pm
Pulse Width (FWHM)	>15 ns (nominal)
Pointing Stability	± 25 μrad
Energy Stability	<3% RMS
Power Requirements	110/220 VAC
Water Requirements	closed-loop chiller is included
Diode lifetime in Evolution-15 pump laser	>5,000 hours on average
Crystal lifetime in harmonics package	>1 year on average

¹ Wavelength is tunable ±0.1 nm. Center wavelength can be selected from 192.75 to 197.

² Refers to 70% fringe visibility at 193 nm.

Mechanical Specifications



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

For full details on warranty coverage, please refer to the Service and Support section at www.Coherent.com, or contact your local Sales or Service Representative.

