

DLC Holo-Litho 405

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Cost-efficient, single-frequency diode laser, 1 Watt @ 405 nm

While laser diode based systems at 405 nm have more or less eliminated gas lasers in low power applications like microscopy, cytometry or microlithography already 15 year ago, Krypton ion gas lasers remained the only industrially suited sources of watt-level CW output in the deep blue wavelength region (406.7 nm and 413.1 nm), more power demanding applications had to rely on the vintage gas laser technology.

TOPTICA's Holo Litho 405 is the ideal replacement for the bulky and power hungry Krypton ion gas lasers commonly used in lithographic and holographic applications. The DLC Holo-Litho 405 provides 1 W output power at 405 nm combined with an excellent beam quality. Beam diameter and M^2 (typ. 1.15) are designed to be similar to the established gas laser parameters to allow for an easy integration without significant changes to the optical system.

Where you will see changes is your cost of operation! While the Krypton ion gas laser requires several kilowatts of electrical power and cumbersome

water cooling, the "all-semiconductor" DLC Holo-Litho 405 draws less than 100 Watts and doesn't depend on water cooling. This alone results in a significant cost reduction of several thousands of dollars per year. Furthermore the user also benefits from longer service intervals and lower refurbishment costs. Trained personnel can easily perform on-site replacements of the individual semiconductor field replaceable units, reducing down-time and increasing profitability.

The DLC Holo-Litho 405 includes a fully-automated, push-button optimization of the opto-mechanics, as well as output power stabilization. This allows an easy, hands-off and remote operation of the system via the included graphical user interface or by integrating it into the customer's control software.



Applications

- Lithography
- Laser Direct Imaging
- Mask writing
- Holography
- Interferometry

Key Features

- 1 Watt @ 405 nm
- Beam quality: $M^2 = 1.15$ (typ.)
- Highest wall-plug efficiency
- High coherence: < 1 MHz linewidth, i.e. > 100 m coherence length
- Hands-off operation and push-button-style user interface
- Easy gas laser replacement

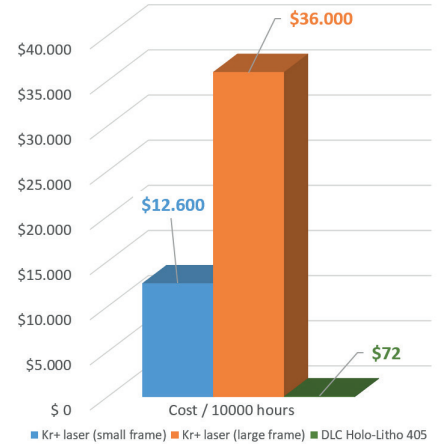


DLC Holo-Litho 405

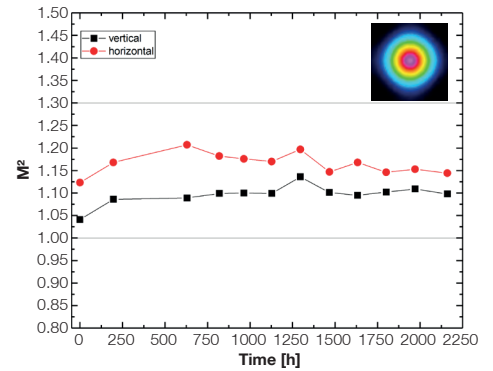


Lasers Specifications*	DLC Holo-Litho 405
Output power	1 W
Linewidth	< 1 MHz
Wavelength	405 nm
Beam diameter (1/e ²)	1.3 ± 0.3 mm
Beam divergence (full-angle)	< 1 mrad
Ellipticity	< 10 %
Beam pointing stability (typ.)	10 µrad / K
Beam quality	TEM ₀₀
M ² (typ.)	M ² _x < 1.15, M ² _y < 1.15 (max.: M ² _x < 1.3, M ² _y < 1.3)
Polarization	> 100 : 1, linear, vertical
Power stability (rms)	drift < 1 % over 8 h
RIN noise	< 1 % rms (10 Hz - 10 MHz)
Lifetime	> 5.000 hours
Utility and Environmental Specifications	
Laser head dimensions	485 x 410 x 90 mm ³ (L x W x H)
Control unit dimensions	448 x 348 x 154 mm ³ (W x D x H)
Umbilical cable length	2 m
Temperature range	
Operating	20 °C to 30 °C, stabilized to ± 3 °C, non-condensing
Storage & shipping	-10 to +50 °C, non-condensing
Cooling requirements	
Laser head	Conduction.
Optional cooling plate with closed loop chiller	Air-cooled
Control unit	Air-cooled
Line voltage	AC 100 - 240 V 50/60 Hz
Power consumption	< 100 W
Communication interface	USB, Ethernet

* Subject to change without notice



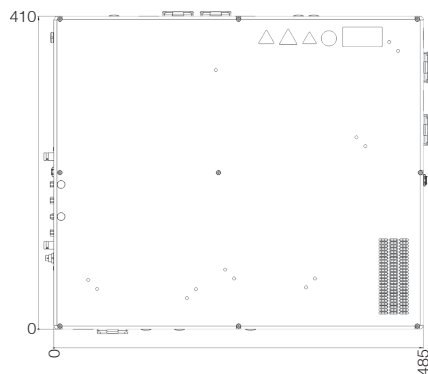
Electricity cost per 10,000 hours based on 0.09 cent/kWh.



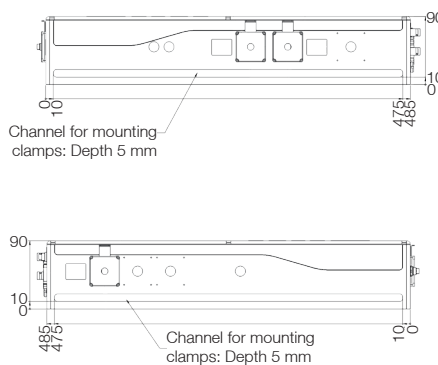
Consistent long-term beam quality.

DLC Holo-Litho 405 Laser Head

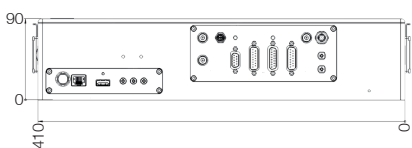
Top view



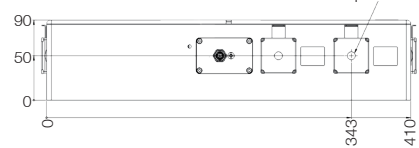
Side view



Back view



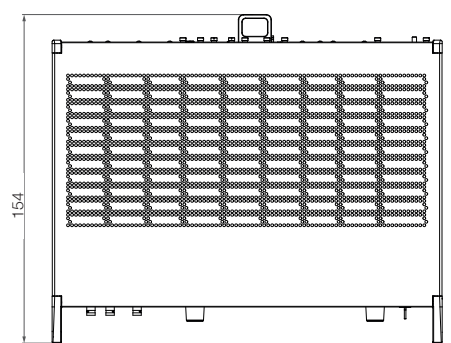
Front view



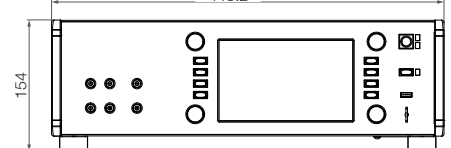
All dimensions given in mm.

DLC Holo-Litho 405 Controller

Top view



Front view



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