VALO SERIES
LASER DATASHEET

VEXLUM

SINGLE-FREQUENCY LASER *for research*

Key benefits

- High-output power
- Broad-wavelength coverage
- Narrow-linewidth single frequency
- Excellent beam quality

Proven applications

- Laser cooling
- Rydberg transitions
- Optical traps
- Qubit addressing
- Optical clock transition addressing

Vertical-external-cavity surface-emitting laser (VECSEL) a.k.a. Optically pumped semiconductor laser (OPSL)

	VALO SF	VALO SHG
Architecture	Direct emitting VECSEL	Intracavity doubled VECSEL
Gain	Optically-pumped semiconductor	
Wavelength[1]	700 – 2150 nm	350 – 750 nm
Power[2]	0.5 – 12 W	0.1 – 5 W
Additional output	-	Secondary fundamental output for frequency-/phase locking
Beam quality	$M^2 < 1.1$ TEM_{00}	$M^2 < 1.2$ TEM_{00}
Free-running linewidth	< 10 kHz (100 µs)	
Mode-hop free tuning range[3]	> 1 GHz	
Coarse tuning[4]	Minimum +/- 1 THz, up to +/- 5 THz	
Frequency locking	Piezo actuator, 10 kHz bandwidth	
Phase locking	Intra-cavity electro-optical modulator, 1 MHz bandwidth	
Laser size	320 mm x 190 mm x 101 mm (6.1 L)	
Control electronics[5]	Control Unit (VCU) for CW operation, height 4U	
Cooling[5]	Water-to-air chiller, height 4U	

[1] Center wavelength can be selected within the provided wavelength range.
[2] Output power is wavelength dependent. See next page for example power levels. >35 dB single-stage isolator is recommended.
[3] Mode-hop free tuning range corresponds to the laser cavity free-spectral range.
[4] Coarse tuning range is wavelength dependent. Maximum 10 THz tuning range corresponds to the typical gain bandwidth.
[5] The control unit and chiller are 19" rack installable.

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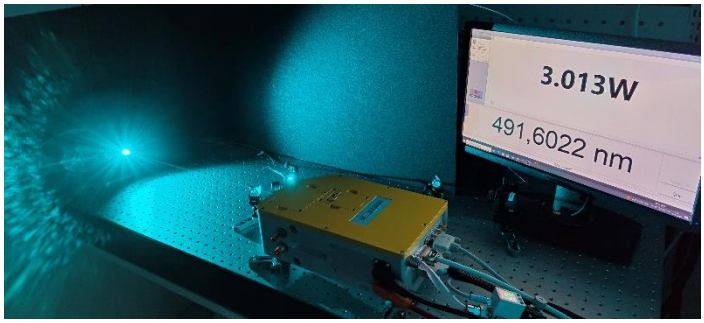
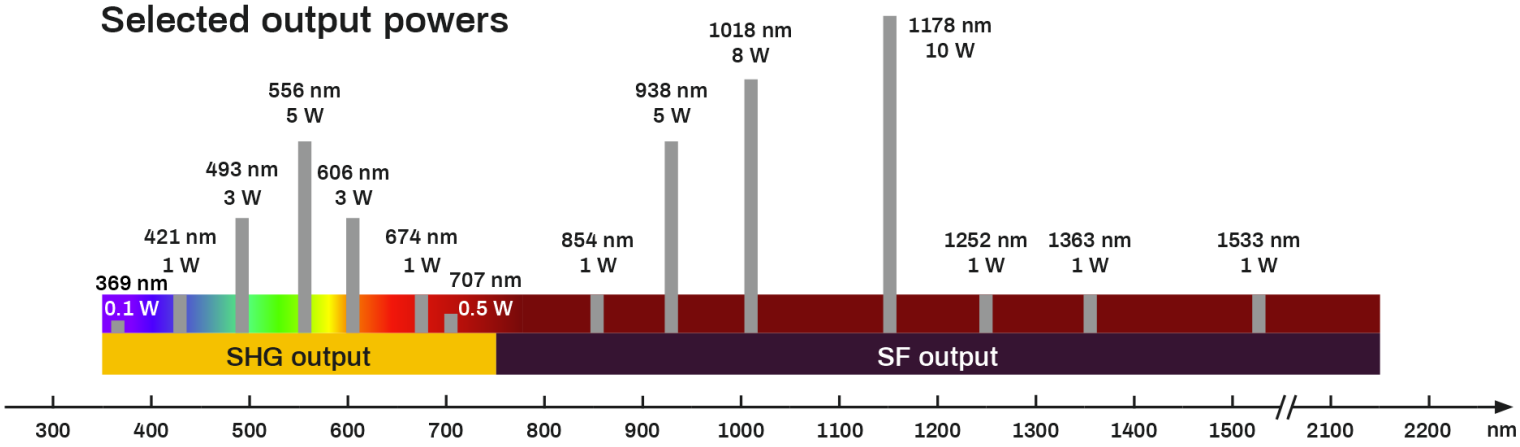
Turnkey single-frequency laser system for AMO research

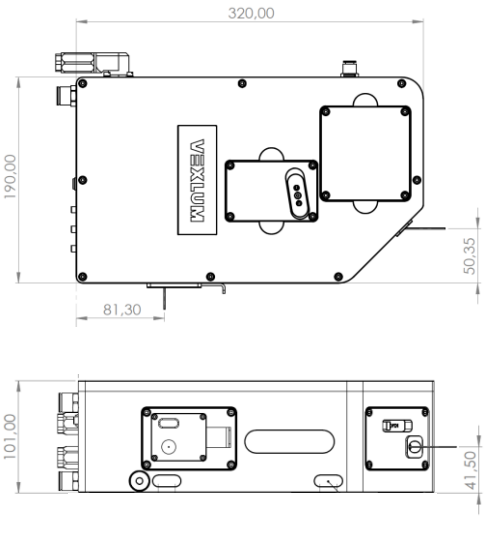


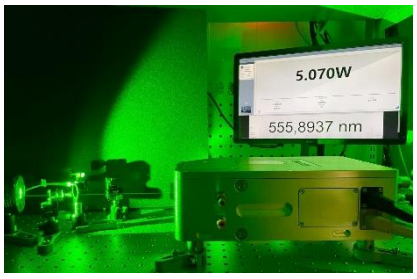
Versatile VECSEL platform

- Designed to meet the diverse needs of the atomic, molecular and optical (AMO) physics research community
- High output power with excellent beam quality, with small SWaP-C, thanks to simple disk laser geometry
- Efficient (”3-in-1”) intracavity second harmonic generation (SHG) for unparalleled visible power and simplicity
- Proven sub-Hz linewidth using intracavity EOM
- Tunable for spectroscopy

Selected output powers







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