VXL® SERIES
LASER DATASHEET

VEXLUM

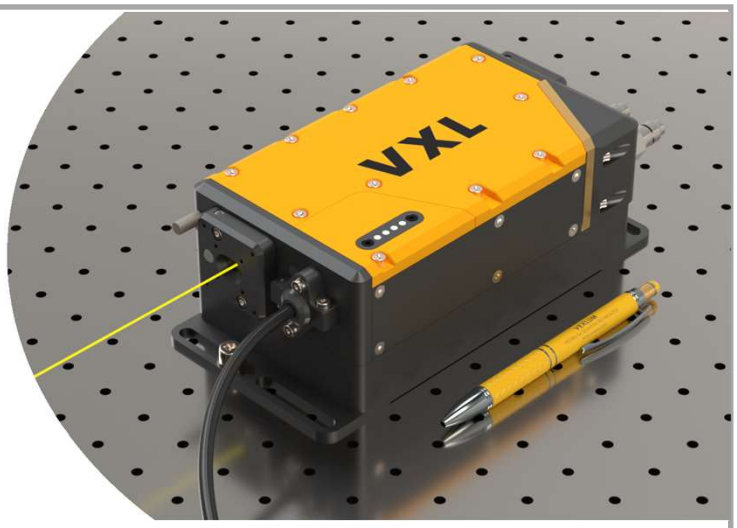
SINGLE-FREQUENCY LASER *for enterprise*

Features

- High-power output
- Broad-wavelength selection
- Narrow-linewidth single-frequency spectrum
- Excellent spatial quality

Integration features

- Compact modular design
- Integrated control electronics
- Rugged sealed laser cavity
- Unparalled SWaP-C for watt-level output
- Improved system performance
- High fiber coupling efficiency



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

Specification	VXL® SF	VXL® SHG
Architecture	Direct emitting VECSEL	Intracavity doubled VECSEL
Gain	Optically-pumped semiconductor gain mirror	
Target wavelength	700 – 2150 nm	350 – 800 nm
Free-space output power[1]	0.5 – 10 W with external pump laser	0.01 – 3 W with external pump laser
Coarse tuning[2]	Up to +/- 1 nm	Up to +/- 0.5 nm
Mode-hop free tuning range[3]	>1 GHz (fast), up to 10 GHz (slow)	>2 GHz (fast), up to 15 GHz (slow)
Free-running linewidth (typical)	< 100 Hz (instantaneous), < 10 kHz (RMS, 10 µs), < 100 kHz (RMS, 100 µs)	
Slow modulation (typical)	Piezoelectric element on cavity mirror, 10 kHz bandwidth, 50 MHz/V modulation depth	
Fast modulation (typical, optional)	Intra-cavity electro-optical modulator (EOM), 1 MHz bandwidth, 50 kHz/V modulation depth	
RMS RIN (typical, unlocked)	< 0.05 % (10 Hz – 3 MHz)	
Power stability (typical, unlocked)	< 0.5 % (RMS over 8 h)	
Optical signal-to-noise ratio (typical)	> 100 dB	
Beam quality[4]	$M^2 < 1.1$ TEM_{00}	
Beam diameter and divergence[4]	< 1.5 mm, < 5 mrad	< 1.5 mm, < 8 mrad
Polarization, linear	Horizontal, p-polarized	Vertical, s-polarized
Secondary output beam	Not applicable	Fundamental λ (horizontal, p-pol.)
Polarization extinction ratio (PER)	> 20 dB, linear polarization	
Laser head dimensions	179 mm x 103 mm x 75 mm (1.4 L. Rack mountable, 2U height requirement)	
Pump unit dimensions	214 mm x 110 mm x 75 mm (1.8 L. Rack mountable, 2U height requirement)	
User Interface	Remote control over Ethernet/USB, GUI for PC, simple UI on pump unit	
Power supply (external unit)	Input 100 – 240 VAC, 50 – 60 Hz; Output 24 VDC, 300 W.	
Cooling[5]	Water-to-air chiller, height 4U.	

[1] Output power is wavelength dependent. See the next page for typical power levels. Single-stage isolator is recommended for applications with back reflections.
[2] Coarse tuning range is wavelength dependent.
[3] Mode-hop free tuning range (Fast) corresponds to the laser cavity free-spectral range scanned with piezo voltage control. Extended MHFTR is reached with a piezo stack and by adjusting other tuning elements simultaneously.
[4] Typical values at the laser exit aperture. Beam diameter = full width at $1/e^2$ level of the beam. Divergence = full mean divergence angle. Values depend on the laser cavity configuration, i.e. the wavelength.
[5] The default water-cooling unit is 19" rack mountable.

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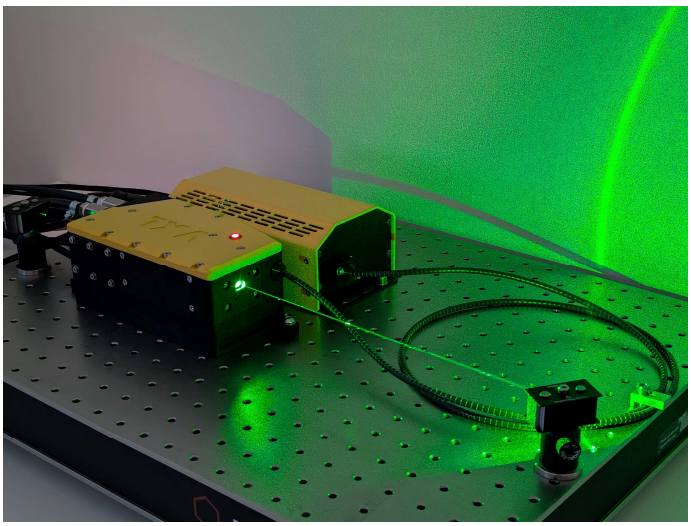
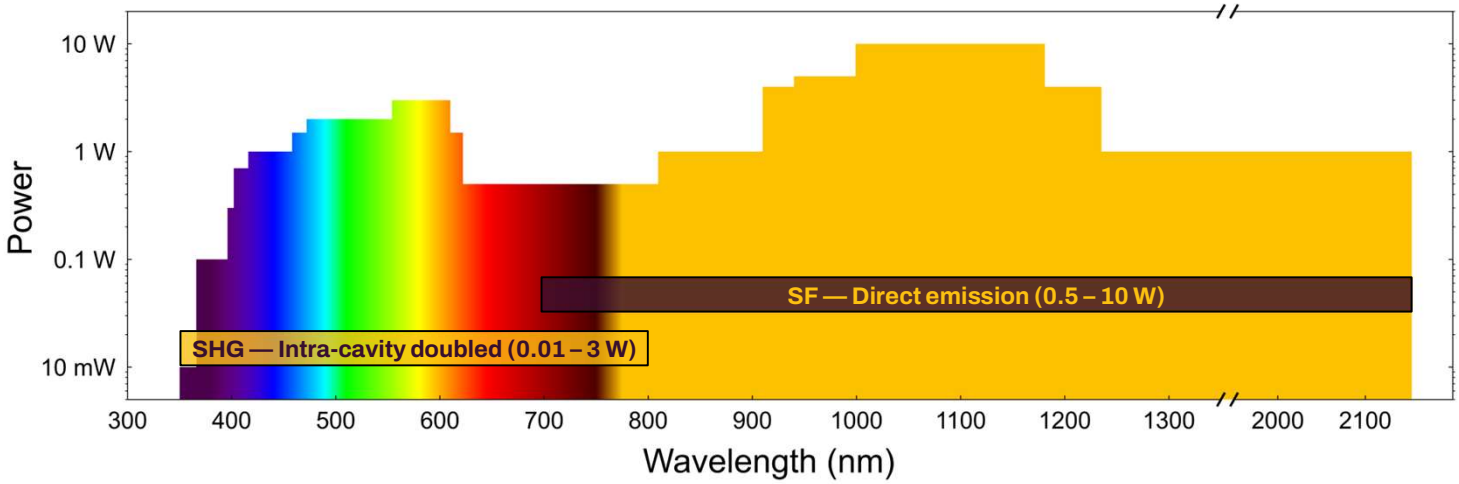
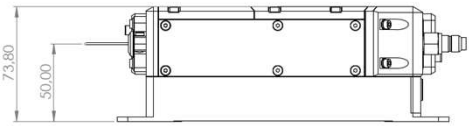
Compact single-frequency laser for system integration

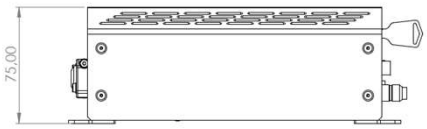


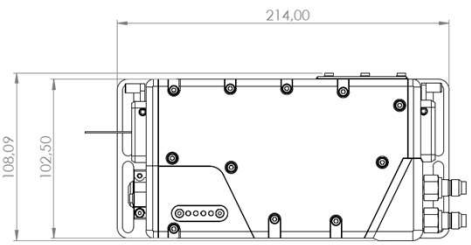
Next generation VECSEL platform

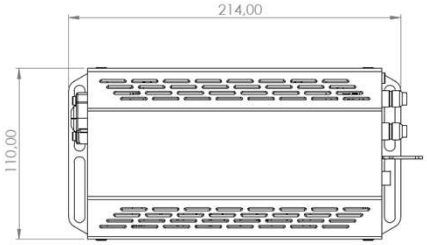
- Designed for system integration and 24/7 operation
- Reduced system Size, Weight, Power consumption and cost (SWaP-C)
- Modular design for easy and fast servicing with spares
- Fiber-in & fiber-out interface for fieldable applications











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