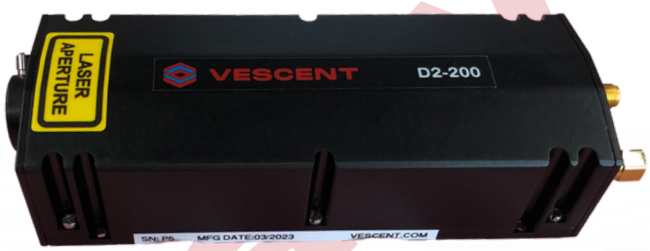
D2-200 DBR Laser Module

The D2-200 laser module is a complete redesign of our robust Distributed Bragg Reflector (DBR) diode laser. The D2-200 houses a new Virtual Point Source (VPS) DBR laser. The VPS design uses a proprietary lensing system to reduce astigmatism matching the divergence in the fast axis to that of the slow axis. The output is near gaussian with a very low M^2.

DBR laser diodes are fabricated with the feedback grating patterned directly adjacent to the gain region of the diode. By virtue of this short cavity with no moving tuning element, they are highly immune to vibrations and acoustic perturbations. The short cavity allows mode hop-free current tuning over more than 25 GHz. The tuning is very fast and is amenable to high-bandwidth servo control for easy locking to atomic and molecular transitions or offset locking to a reference laser.



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The D2-200 employs two stages of temperature-control and incorporates optical isolation for dependable long-term, mode hop-free operation. It has undergone a Design For Manufacturability process (DFM) to reduce drift in alignment making for a more reliable design than its highly popular predecessor.

Features:

- Potassium, Rubidium, and Cesium Wavelengths
- Vibration immune: no moving parts or piezos
- 25 GHz mode hop-free tuning via high-bandwidth injection current
- $M^2 < 1.15$
- Optically isolated for spectral purity
- Fiber-coupled configurations
- High-speed modulation input port
- 100 mW at 780, 795, & 828 nm
- 130 mW at 852 nm
- 150 mW at 895 nm


D2-200
Front View


D2-200
Rear View

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D2-200 Specifications

Parameter	Value	Units
Light Quality		
Available Center Wavelengths [1]	767, 770, 778, 780, 785, 795, 828, 852, 895	nm
Linewidth	< 500	kHZ
Beam Diameter	0.9	mm
Beam Height	0.95	inch (Note 2)
Beam Divergence (Full Angle)	< 1.3	mrad
Beam Quality	$M^2 < 1.15$	
Optical Isolation [3]	> 50	dB
Polarization	Horizontal	
Polarization Extinction Ratio	> 18	dB
Power		
$\lambda \leq 770$ nm	25	mW
778 nm $\leq \lambda \geq$ 828 nm	100	
λ = 852 nm	130	
λ = 895 nm	150	
Tuning		
Temperature [4]	~ 1.5	nm
Current [5]	> 25	GHz
Other		
Dimensions	5.87 x 3.75 x 1.71 149 x 95.3 x 43.5	inch mm
Temperature Drift	< 0.1	mK/hr
Operating Temperature Range	15-30	C°

[1] Wavelength centered on alkali metal transitions for 767, 770, 780, 795, 852, & 895 nm. Other wavelengths set by wavemeter.

[2] One Mike Anderson

[3] 2-stage

[4] 15-35°C (above dew point temperature)

[5] Mode hop-free

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