

D2-100 DBR Lasers



D2-100 DBR High-Power Laser

The D2-100-DBR laser module is comprised of a Distributed Bragg Reflector (DBR) laser diode in a temperature-controlled housing with beam conditioning optics and an optical isolator. DBR laser diodes are fabricated with the feedback grating patterned directly adjacent to the gain section of the diode. They are highly immune to vibrations and by virtue of a very short cavity (~ 1 mm), they can be injection current tuned mode hop-free over more than 40 GHz, enabling very fast servo control for easy locking to atomic and molecular transitions.

The D2-100 is a complete laser module. It includes an anamorphic prism pair for beam circularization and a 30 dB optical isolator for clean, dependable mode hop-free operation.

Features:

- Potassium, Rubidium, and Cesium Wavelengths
- Vibration immune: no moving parts or piezos
- 40 GHz mode hop-free tuning via high-bandwidth injection current
- Optically isolated standard
- Beam shaping optics standard
- Fiber-coupled configurations
- Up to 100 mW at 780, 795, & 828 nm
- Up to 160 mW at 852 & 895 nm

Applications:

- Cold-atom physics
- Atomic clocks
- Inertial navigation
- Gravity measurements
- Quantum computing & cryptography
- Electromagnetically induced transparency
- Cavity transfer of frequency standards

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Parameter		Min	Typical	Max	Units
General Performance					
Available Center Wavelengths ¹		760, 767, 770, 780, 785, 795, 828, 852, 895			nm
Center Wavelength Setpoint ²		On transition for K, Rb, & Cs wavelengths			
Divergence		<1.3 mrad			Full angle
Tuning					
Temperature		~1.5			nm
Injection Current (Mode Hop-Free)	≤40 mW	40	50	60	GHz
	>40 mW (HP1)	25	30	40	
Linewidth	≤40 mW	0.5	0.8	1.0	MHz
	>40 mW (HP1)	0.3	0.5	0.7	
Output Power					
Standard Models		λ ≤ 770 nm		25	mW
		λ ≥ 780 nm		40	
High-Power Models (-HP1)		λ ≤ 828 nm		100	
		λ = 852 nm		170	
		λ = 895 nm		160	
Configuration					
Polarization		Horizontal			
Two-stage Temperature Regulation		~0.1			mK/hr
Beam Shaping		Anamorphic prism pair			
Integral Optical Isolation	≤40 mW	>30			dB
	>40 mW (HP1)	>60			
Dimensions					
Head	≤40 mW	3.75 × 3.98 × 1.70 9.5 × 10.1 × 4.3			inches cm
	>40 mW (HP1)	5.69 x 3.98 x 1.70 14.4 x 10.1 x 43.2			

All specifications subject to change without notice.

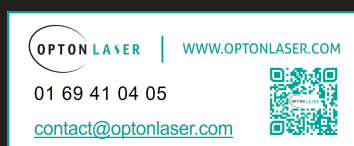
²Other wavelengths set by wavemeter.

¹Other wavelengths available on request.



The D2-100 Distributed Bragg Reflector (DBR) laser is a complete laser head robust to mechanical vibration and acoustic interference because it requires no moving parts to tune. Beam shaping and optical isolation provide for extremely stable single-mode, mode hop-free tuning and operation.

Vescent
14998 W. 6th Ave., Suite 700
Golden, CO 80401
USA
+1 (303) 296-6766
www.vescent.com



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