

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

D2-100 DBR Laser

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				
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	$\lambda \leq 770$ nm		25	mW	
	$\lambda \geq 780$ nm		40		
High-Power Models (-HP1)	$\lambda \leq 828$ nm		100		
	$\lambda = 852$ nm		170		
	$\lambda = 895$ 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 × 3.98 × 1.70 14.4 × 10.1 × 43.2			

All specifications subject to change without notice.

¹Other wavelengths available on request.

²Other wavelengths set by wavemeter.



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.

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