

D2-Series Frequency Stabilized Diode Laser System



*From Box to Locked in
Under an Hour!*

The D2-Series laser system is a complete turn-key solution that will be the easiest part of your experiments. Monolithic laser designs provide robust performance with piezo-less, non-mechanical tuning. Our Libbrecht-Hall current source and laser servo enable easy locking to atomic hyperfine transitions and cavities.

D2-Series laser system comprising: i) electronics modules (background, left to right) laser servo, power supply, and laser controller, and ii) optical modules (foreground, left to right) DBR module and spectroscopy module.

Applications include:

Atom Trapping & BEC

EIT

Interferometry

Absolute Wavelength Reference

Features:

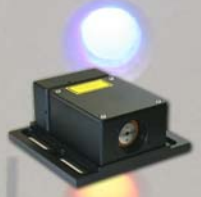
- Non-mechanical, monolithic laser designs.
- Large mode-hop-free tuning by injection current or temperature.
- Modular turn-key laser system.
- Supports both peak and side locking.
- Servo signals accessible via front panel BNCs.
- Unlock-jump-relock with external computer control.

Vescent
Photonics

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D2-100-DBR, Laser Module: With the grating located directly on the semiconductor chip, the DBR laser module provides the most robust performance and longest mode-hop-free tuning range. Includes laser diode, collimation and circularization optics, optical isolator, and two stages of temperature control.

DBR: Distributed Bragg reflector laser diodes (Photodigm, Inc.)



D2-100-CECL, Laser Module: Chip-sized external cavity design provides DBR-like performance with a narrower linewidth at more wavelengths. Includes chip-external-cavity-laser (CECL), collimation and circularization optics, and two stages of temperature control.

D2-110, Spectroscopy Module: Contains a saturated-absorption spectrometer and a 12 MHz, shot-noise-limited photo-detection circuit. Temperature control of the rubidium cell and laser power normalization minimizes lock point drift.



D2-105, Laser Controller: Based on an ultra-low-noise design (Libbrecht and Hall, '93) with <math><100\text{ nA}</math> rms current noise (below 1 MHz),



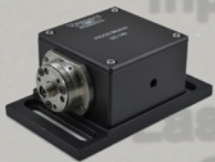
D2-125, Laser Servo: A high-speed laser servo with adjustable PI²D poles and zeros. Dual servos enable feedback to both piezo and injection current for most commercially-available external cavity diode lasers.

D2-005, Power Supply: An external, low-noise linear power supply keeps 60 Hz and harmonics off your signals.



D2-120, Fiber Coupling Module and D2-130 Isolator Module: Fiber coupling module contains a 35 dB isolator, 1/2-waveplate, and FiberPort™ for coupling into fiber. Isolator module is w/o FiberPort and is used prior to the PICOS Module.

D2-135, Offset Phase Lock Servo and D2-150 Heterodyne Module: The OPLS provides offset phase locks up to 9.8 GHz controlled by computer or front panel. The heterodyne module accepts beams from two lasers and output married beam to optical fiber.



D2-140, PICOS Module: A 100 μs Pulse generator, Intensity Controller, and Optical Shutter with 65 dB attenuation.