

LDL External Cavity Diode Laser



The MOGLabs LDL Littrow External Cavity Diode Laser is a research quality laser for advanced applications in atomic and quantum physics.

All springs – including flexures – have been removed to create a robust, stable, and vibrationally inert device. Grating rotation and vertical alignment are uncoupled, allowing simple tuning over the full diode wavelength range without realignment.

When used with a MOGLabs Diode Laser Controller, mode-hop-free scanning range of up to 40GHz and linewidth below 100 kHz can be achieved, with a broad range of AR coated and less expensive uncoated diode. Diode replacement and re-alignment are easily accomplished by the end-user. Wavelength options extend from 370nm to 1612nm, and powers up to 200mW extra-cavity.

Features

- Vibrationally inert
- Passive stability
- Wide tuning range
- Decoupled grating rotation and tilt
- Wide mode-hop free scan range
- Narrow linewidth
- Fast piezo feedback
- Precision alignment controls
- High bandwidth low latency modulation
- Diode protection circuit and relay
- Low frequency noise

Applications

- Laser cooling and trapping
- Bose-Einstein condensation
- Quantum optics: squeezed light
- Electromagnetic transparency and slow light
- Time and frequency standards
- Laser spectroscopy
- · Physics teaching labs

External Cavity Diode Laser

Specifications LDL

Wavelength/frequency

370nm to 1612nm Up to 200mW output power, diode dependent

Linewidth Typically <200kHz, diode dependent

20MHz bandwidth, AC or DC coupled, 20ns latency Modulation

RF bias tee option: >2.5GHz bandwidth

Coarse tuning range Up to 50nm for single diode

Optical

Beam diameter (1/e2) Typically 1mm x 2mm to 1.5mm x 4mm; diode-dependent

Linear 100:1 typical Polarisation

Thermal

TEC $\pm 14.5 \text{V} 3.3 \text{A} Q = 23 \text{W} \text{ standard}$

NTC $10k\Omega$ standard; AD590, 592 optional Sensor

Stability at base ±1mK (controller dependent)

Cooling Water cooling connections optional (usually not required)

Sweep/scan

Scan range Up to 50 GHz; with MOGLabs controller, rate 4Hz to 70Hz

Mode-hop free scan 10 GHz to 40GHz, uncoated diode, with current feed-forward

Piezo 0 - 120V or 0 - 150V, 2 to $5\mu m$ 1 - 3cm (5 - 15 GHz FSR) approx. Cavity length

Electronics

Protection Relay, cover interlock connection, reverse diode

Indicator Laser ON/OFF (LED)

20MHz bandwidth, AC or DC coupled, 20ns latency

Modulation input RF bias tee option: >2.5GHz bandwidth,

16MHz - 2.5GHz (lower cutoff optional)

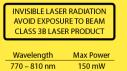
MOGLabs DLC Diode Laser Controller (single cable connect) Connector

Dimensions

105 x 90 x 90mm (LxWxH), 1kg **Dimensions**

Options

Faraday isolator; fibre coupled; modulation low-frequency cutoff. Please contact MOGLabs for further details.





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