



## External Cavity Diode Laser ECD-003



The MOGLabs external cavity diode laser offers research quality at a teaching-lab price. Model ECD-003 is robust, stable, and insensitive to external vibrations. The performance is excellent when used with a MOGLabs Diode Laser Controller, with mode-hop-free scanning range of more than 10 GHz and linewidth below 100 kHz using a low-cost *uncoated* 780 nm consumer diode. Diode replacement and re-alignment are easily accomplished by the end-user.

### *Features*

- Wide mode-hop free scan range
- Narrow linewidth
- Fast piezo feedback
- Precision alignment controls
- Microwave RF modulation input
- Diode protection circuit and relay

### *Benefits*

- High-performance, low cost
- Stable, robust
- Low frequency noise
- High feedback bandwidth
- Use with MOGLabs external cavity diode laser controller, or your existing commercial or home-made electronics

### *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

*Diode lasers for everyone*

# External Cavity Diode Laser

## Specifications ECD-003

### Wavelength/frequency

780nm standard	50mW to 120mW output power, diode dependent
Linewidth	Typically <300kHz FWHM
RF modulation	2.5GHz bandwidth
Grating	Standard: 1800 l/mm gold coated
Coarse tuning range	±5nm typical

### Optical

Beam characteristics	4mm × 1.5mm (1/e <sup>2</sup> ) typical; diode dependent
Polarisation	Vertical linear 100:1 typical

### Thermal

TEC	±14.5V 3.3A $Q = 23W$ standard
Sensor	NTC 10kΩ standard; AD590, 592 optional
Stability at base	±1mK (controller dependent)
Cooling	Water cooling connections optional (usually not required)

### Sweep/scan

Scan range	25 GHz typical, with MOGLabs controller
Mode-hop free scan	10 GHz typical, uncoated diode, with current feed-forward
Piezo	0 – 150V, 4.8μm, resonance at >1kHz with std grating
Cavity length	1 – 3cm (5 – 15 GHz FSR) approx.

### Electronics

Protection	Relay, cover interlock connection, reverse diode
Indicator	Laser ON/OFF (LED)
RF input	16MHz – 2.5GHz bias tee (lower cutoff optional)
Connector	MOGLabs DLC Diode Laser Controller (single cable connect)

### Dimensions

Dimensions	122 x 94 x 70mm (LxWxH), 1kg
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### Options

Fold mirror for fixed output beam direction; laser diode AR coating, wavelength and power; grating; scan range; modulation cutoff frequency; TEC size/rating. Please contact MOGLabs for further details.