



CEL/CEX/CEF Cateye Laser



The MOGLabs Cateye Laser offers a new twist in external cavity diode lasers.

A cateye reflector and ultranarrow filter replace the alignment-sensitive diffraction grating of conventional Littman-Metcalf and Littrow designs.

The CEL is robust, stable, and acoustically inert. In combination with MOGLabs electronics, the linewidth can be below 20 kHz. Wavelength coverage includes most of 450 – 530nm and 630 – 1620nm, with power up to 250mW extra-cavity. It is available in an economical compact chassis, or as a larger chassis (CEX) allowing for internal single or double-stage isolator, beam-shaping, and fibre coupling (CEF).

Features

- Cateye filter design
- Fast piezo feedback
- Self-aligning
- Precision wavelength adjustment

Benefits

- High-performance
- Narrow linewidth
- Acoustically inert
- Very low frequency noise

Applications

- Laser cooling and trapping
- Bose-Einstein condensation
- Trapped ion quantum computing
- Quantum optics: squeezed light
- Electromagnetic transparency and slow light
- Time and frequency standards
- Laser spectroscopy

Cateye Laser

Specifications CEL

Wavelength/frequency

450 – 530nm; 630 – 1620nm

Up to 250mW output power, diode dependent

Linewidth

Typically <100kHz, configuration dependent

Modulation

20MHz bandwidth, AC or DC coupled, <20ns phase delay
RF bias tee option: >2.5GHz bandwidth

Coarse tuning range

Diode dependent; e.g. 776nm – 802nm or 850 – 895nm (single diode)

Optical

Beam diameter ($1/e^2$)

Typically 0.6 x 0.3mm; diode-dependent

Polarisation

Vertical linear 100:1 typical (standard diode)

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

20 GHz typical, with MOGLabs controller, diode dependent

Mode-hop free scan

20 GHz typical, with current feed-forward

Piezo

User-replaceable module

Electronics

Protection

Relay, cover interlock connection, reverse diode

Indicator

Laser ON/OFF (LED)

Modulation input

SMA DC to 20MHz or AC 10kHz to 20MHz, ground isolated
Option: RF bias tee, 16MHz – 2.5GHz (lower cutoff optional)

Connector

MOGLabs DLC Diode Laser Controller (single cable connect)

Dimensions

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Compact (as shown): 108 x 70 x 86.7mm (LxWxH), 0.5kg
Extended (CEX/CEF): 240 x 95 x 93 (LxWxH), 1.3kg

