



# SureLock™

## Wavelength Stabilized Lasers for Spectroscopy and Analytical Instrumentation

All SureLock™ Wavelength Stabilized Laser Diodes and Laser Modules incorporate the Coherent PowerLocker® VHG filter, a miniature, ultra-narrowband Volume Holographic Grating (VHG), creating an external cavity that “locks” the diode laser wavelength into a narrowed optical spectrum. This increases spectral brightness and delivers stabilized optical performance over extended temperature ranges, transforming standard diode lasers into single-frequency or spectrum-narrowed, instrument-quality lasers. The extremely short external cavity configuration results in better mode selection and a smaller footprint than Littrow or Littman cavity designs, while reducing the spectral bandwidth of a typical laser by an order of magnitude.

### FEATURES & BENEFITS

- Stabilized wavelength over a broad temperature range
- Single frequency or spectrum-narrowed operation
- Free-space and fiber-coupled options
- Ultra-compact footprints
- Laser components to turnkey modules with temperature and current controls
- Available computer and onboard user interfaces

### APPLICATIONS

- Raman Spectroscopy
- Holography
- HeNe Replacement
- Particle Characterization
- Analytical Instrumentation
- Speckle Interferometry
- Metrology and Inspection



**LASER COMPONENTS**

**TO Series**

- Stabilized, single-frequency performance and ultra-compact package
- Incorporates PowerLocker® VHGs directly inside the can
- Shortest cavity length for large separation between mode hops

Available in wavelengths from 638 nm to 808 nm



**CP Series**

- Incorporates both a PowerLocker® and collimating lens to roughly collimate the output beam, simplifying integration
- Available in both single frequency (with optional ASE clean-up filters) and multimode configurations

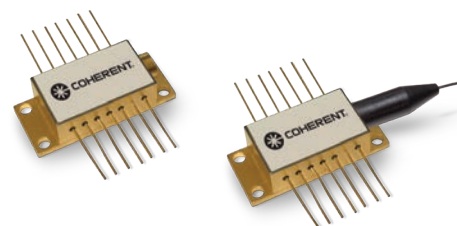
Available in wavelengths from 405 nm to 1064 nm



**BF Series**

- Spectrum Narrowed, multimode output
- Incorporates TEC inside a traditional 14-pin butterfly package
- Fiber-Coupled (with 100µm MM fiber and FC/PC connector) or Free-Space Collimated Configurations

Available in wavelengths from 785 nm to 1064 nm



**OEM-BF Series**

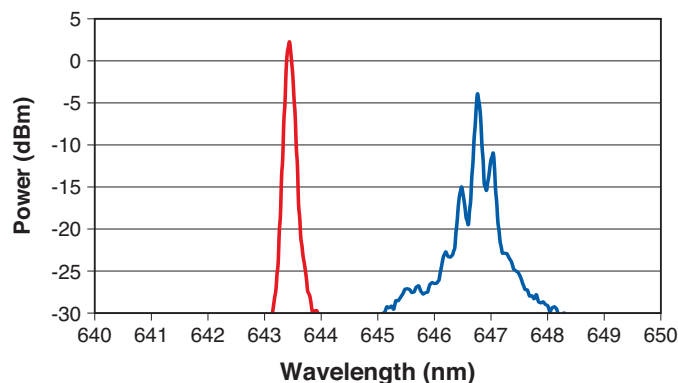
- Incorporates temperature and current control onto an ultra-compact OEM board
- Available with Fiber Coupled or Free Space BF Series Lasers
- Ideal for OEM integration

Available in wavelengths from 785 nm to 1064 nm



**PRINCIPLE OF OPERATION**

The PowerLocker® acts as an ultra-narrowband, wavelength-selective filter that provides stable, controlled optical feedback into the laser. This increases the power in the desired mode and reduces unwanted spectral components, reducing the linewidth of multimode lasers or forcing single mode lasers into single frequency operation.



**LASER MODULES**

**RO Series**

- Incorporates most TO or CP stabilized laser diodes into a compact cylindrical footprint with collimated output beam
- Integrated USB control of both temperature and current
- Ideal for HeNe replacement or OEM instrument integrations

Available in wavelengths from 633 nm to 808 nm



**LM Series**

- Incorporates any TO or CP stabilized laser diode into a user-friendly, compact footprint with temperature and current controls
- Single Frequency or Spectrum Narrowed, multimode output
- Offers both RS-232 computer and integrated user keypad controls
- Under 1 minute warm-up

Available in wavelengths from 405 nm to 1064 nm



**LMFC Series**

- Single Frequency or Spectrum Narrowed, multimode output
- Convenience and exceptional mode quality of a fiber-coupled output
- FC/PC or FC/APC connected output fiber
- Same RS-232 and keypad controls as LM Series

Available in wavelengths from 405 nm to 1064 nm



**BT Series**

- Mini-Benchtop with high-power, spectrum-narrowed performance for the lab
- Both manual power controls and a digital touchscreen interface
- Better than 1% power stability with less than 1 minute warm-up
- FC/PC front panel connector and emergency stop

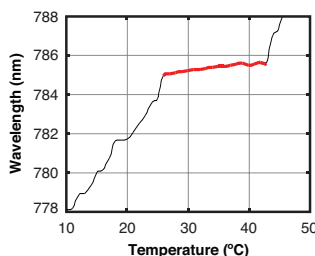
Available in wavelengths from 405 nm to 1064 nm



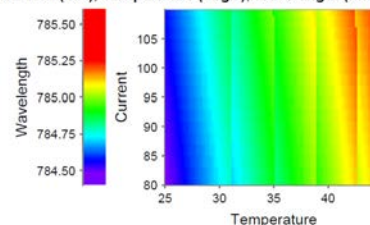
**COMPREHENSIVE PERFORMANCE AND CHARACTERIZATION TESTING**

All SureLock™ lasers are thoroughly characterized using our proprietary automated test stations, providing detailed information about wavelength, temperature stabilized range, and mode hop behavior. Our unique “3D” color plots of wavelength as a function of both temperature and current also provide an integrated view of the performance to enable the user to select the optimal operating point.

**785 nm 80 mW Stabilized Temperature Range**



**Current (mA), Temperature (degC), Wavelength (nm)**



								
Wave-length (nm)	TO CAN (TO)	Collimated TO (CP)	Butterfly (BF)	OEM Butterfly (OEM-BF)	Round Module (RO)	Compact Module (LM)	Fiber-Coupled Module (LMFC)	Benchtop (BT)
<b>SINGLE FREQUENCY POWER</b>								
405/406		12 mW/25 mW/ 40 mW				12 mW/25 mW/ 40 mW	3 mW SM/PM 6 mW SM/PM	
633		40 mW/70 mW			40 mW/70 mW	40 mW/70 mW	29 mW SM/PM	
638	32 mW	120 mW			30 mW/ 120 mW	30 mW/ 120 mW	14 mW SM/PM 45 mW SM/PM	
640	32 mW				30 mW	30 mW	14 mW SM/PM	
643		120 mW			120 mW	120 mW	50 mW SM/PM	
658	40 mW				30 mW	30 mW	12 mW SM/PM	
660	40 mW				38 mW	38 mW	15 mW SM/PM	
685 to 693	45 mW				40 mW	40 mW	15 mW SM/PM	
780.25	80 mW				75 mW		25 mW SM/PM	
785	80, 100	175 mW/ 225 mW			75 mW/95 mW	75 mW/95 mW/ 175 mW/ 225 mW	30 mW SM/PM 50 mW SM/PM 70 mW SM/PM	
808	120 mW				150 mW	110 mW		
826	170 mW				150 mW	150 mW		
<b>NARROW BAND MULTI TRANSVERSE MODE</b>								
405		250 mW NB				250 mW NB	150 mW NB/MM	150 mW NB
445		325 mW NB				325 mW NB	200 mW NB/MM	200 mW NB
520		375 mW NB				375 mW NB	225 mW NB/MM	225 mW NB
638		280 mW NB				280 mW NB	170 mW NB/MM	170 mW NB
785		500 mW NB	600 mW NB/MM	600 mW NB/MM	500 mW NB	500 mW NB	500 mW NB/MM 350 mW NB/MM	300 mW NB 500 mW NB
830		500 mW NB	600 mW NB/MM	600 mW NB/MM	500 mW NB	500 mW NB	500 mW NB/MM 350 mW NB/MM	300 mW NB 500 mW NB
976			1000 mW NB/MM	1000 mW NB/MM			1000 mW NB/MM	300 mW NB 500 mW NB
1064		500 mW NB	600 mW NB/MM	600 mW NB/MM	500 mW NB	500 mW NB	500 mW NB/MM	300 mW NB 500 mW NB

NOTES:  
 NB = Narrowband (typically 0.08 nm FWHM bandwidth, diode dependent) SM/PM = Single Mode/PM Fiber Coupled (PM Standard with FC/PC Connector) NB/MM = Narrow Band/Multimode Fiber Coupled (100 micron fiber standard with FC/PC Connector)



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all SureLock Lasers. For full details of this warranty coverage, please refer to the Service section at [www.coherent.com](http://www.coherent.com) or contact your local Sales or Service Representative.  
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