



SureLock™

LM Series Compact Single Frequency Laser Modules

LM Series Compact Single Frequency Laser Modules incorporate the Coherent SureLock VHG-stabilized laser diode to deliver steady, single frequency performance in an ultra-compact footprint. Offering both computer and integrated user controls, the LM Series includes precision temperature and current controls to deliver better than 1 m coherence length and 1% power stability with less than 1 minute warm-up. This tightly integrated package makes it the ideal choice for both OEM instrumentation and laboratory applications.

All SureLock Series lasers are stabilized using the Coherent Power-Locker® Volume Holographic Grating (VHG), ensuring precise, ultra-stable center wavelengths, low temperature dependence, and consistent optical performance over the locked region.

The LM Module is available in wavelengths from 405 nm to 830 nm.



FEATURES & BENEFITS

- Single frequency, collimated TEM output with long coherence length (~1 m)
- Remote computer and onboard user controls with integral LCD Display
- Precision temperature and current stabilization
- Ultra-compact footprint 40 mm x 42.5 mm x 100 mm
- Plug and play operation
- NoiseBlock™ narrow-band ASE suppression filters and beamsplitters available in matching wavelengths to further reduce linewidth and ASE noise

APPLICATIONS

- Raman Spectroscopy
- Interferometry
- Metrology
- HeNe replacement
- Bio-instrumentation
- Particle Characterization
- LIDAR
- Graphic Arts
- Sensing
- Analytical Instrumentation

SureLock: LM Series Compact Single Frequency Laser Modules Datasheet

| SPECIFICATIONS ¹ | LM Series | | | | | | | | | | |
|---|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Center Wavelength ² (vacuum) (Lp/nm) | 405/ 406 | 633 | 638 | 658 | 685 | 690 | 780.25 | 785 | 785 | 808 | 830 |
| Center Wavelength Tolerances (nm) | ±1 | ±0.5 | ±1 | ±1 | ±1 | ±1 | ±0.25 | ±1 | ±1 | ±1 | ±1 |
| Output Power (Po/mW) | 12 25 40 | 40 70 | 30 | 30 | 40 | 40 | 140 | 75 100 | 175 225 | 120 | 150 |
| Beam Size (mm) | 0.6 x 0.3 | 0.6 x 0.9 | 0.6 x 0.8 | 0.7 x 1.1 | 0.9 x 1.4 | 0.9 x 1.5 | 0.4 x 0.8 | 0.9 x 1.7 | 0.4 x 0.8 | 0.9 x 1.7 | 0.9 x 1.4 |
| Linewidth, Maximum (MHz) ($\Delta\lambda$) | 160 | 150 | 300 | 300 | 300 | 100 | 50 | 50 | 50 | 50 | 250 |

¹ All specifications are at rated power with a case temperature of 25°C unless otherwise noted.

² Please specify wavelength at time of ordering.

| OPTICAL OPERATING SPECIFICATIONS | Minimum | Typical | Maximum |
|--|-------------------------------|----------------|--------------|
| Spatial Mode | Single Mode | | |
| Polarization | | 100:1 | |
| Beam Divergence (mrad) | | 1 ¹ | 10 |
| Pointing Stability (μ rad) | | | ±25 |
| Noise (%) (RMS, 0 to 20 MHz) | | 0.25 | 0.5 |
| Power Stability (%) (1 hour) | | 0.10 | 0.5 |
| ELECTRICAL OPERATING SPECIFICATIONS | Minimum | Typical | Maximum |
| Operating Current (A) | | | 1.5 |
| Operating Voltage (VDC) | | 3.3 | |
| Modulation Input (VDC) (TTL) | 0 | | 5 |
| Modulation Speed (kHz) | | | 3 |
| ENVIRONMENTAL OPERATING SPECIFICATIONS | Minimum | Typical | Maximum |
| Storage Temperature | -10°C (14°F) | | 60°C (140°F) |
| Operating Temperature ² | 10°C (50°F) | 25°C (77°F) | 40°C (104°F) |
| Operation Humidity | Non-Condensing | | |
| Dimensions (D x L) | 100 x 80 mm (3.94 x 3.15 in.) | | |

¹ 2 mrad typical for 780.25 nm and 785 nm 175/225 mW versions.

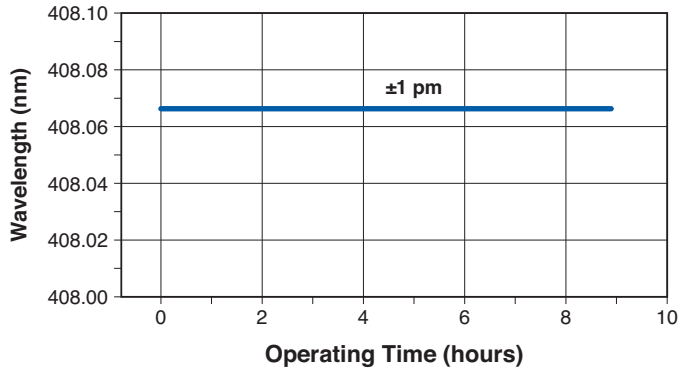
² Non-condensing.

| POWER REQUIREMENTS |
|---------------------------------|
| 100 to 240 V AC, 50 to 60 Hz |
| Connector: +3.3VDC, 2.1 mm dia. |

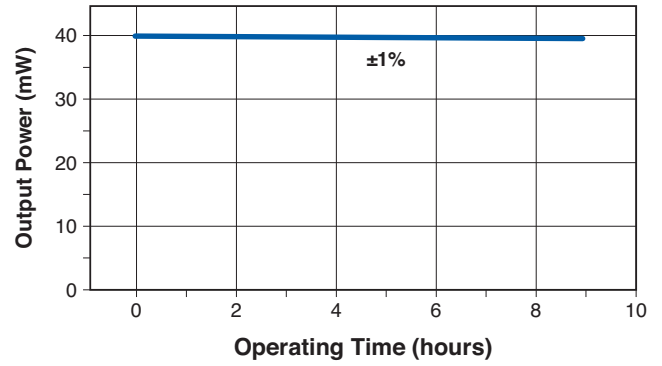
| MODEL NUMBER |
|--|
| LM- $\lambda\lambda\lambda$ -PLR-Power |
| LM- $\lambda\lambda\lambda$ -PLR-Power-1K (includes keyswitch) |

TYPICAL PERFORMANCE

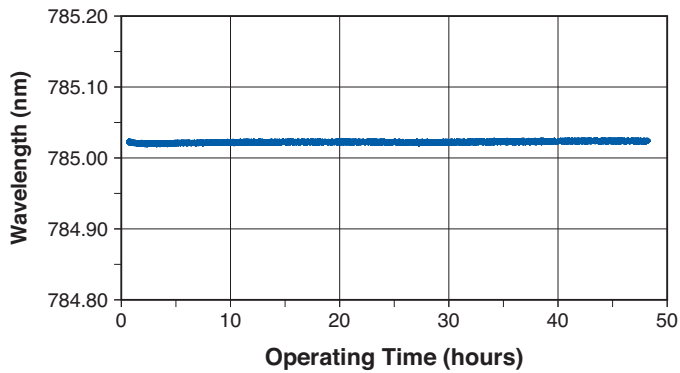
Wavelength Stability
(405 nm Example)



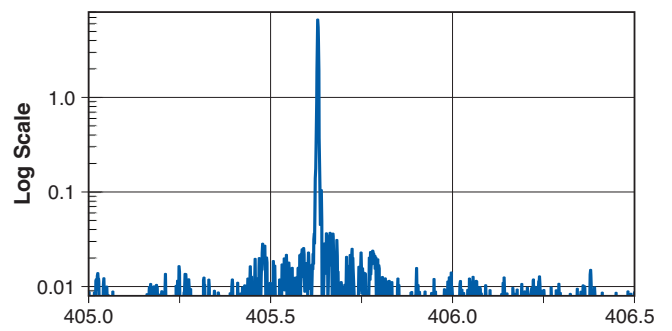
Optical Power Stability
(405 nm Example)



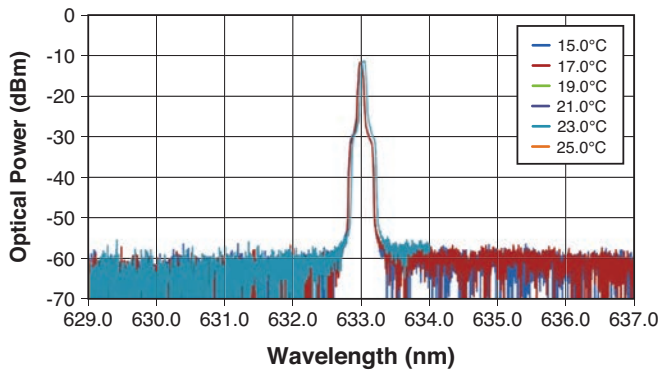
Wavelength Stability
(785 nm Example)



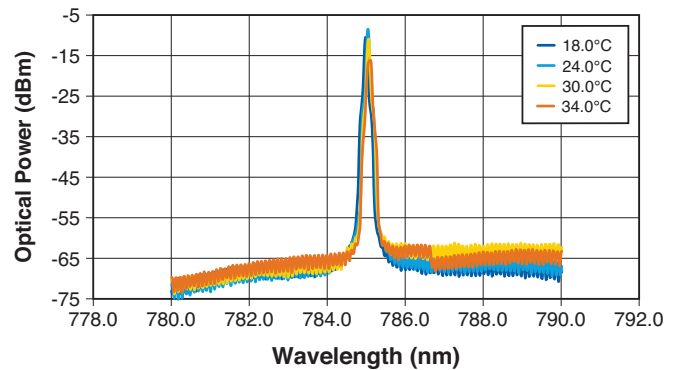
Optical Spectrum
(405 nm Example)



Optical Spectrum
(633 nm Example)



Optical Spectrum
(785 nm Example)



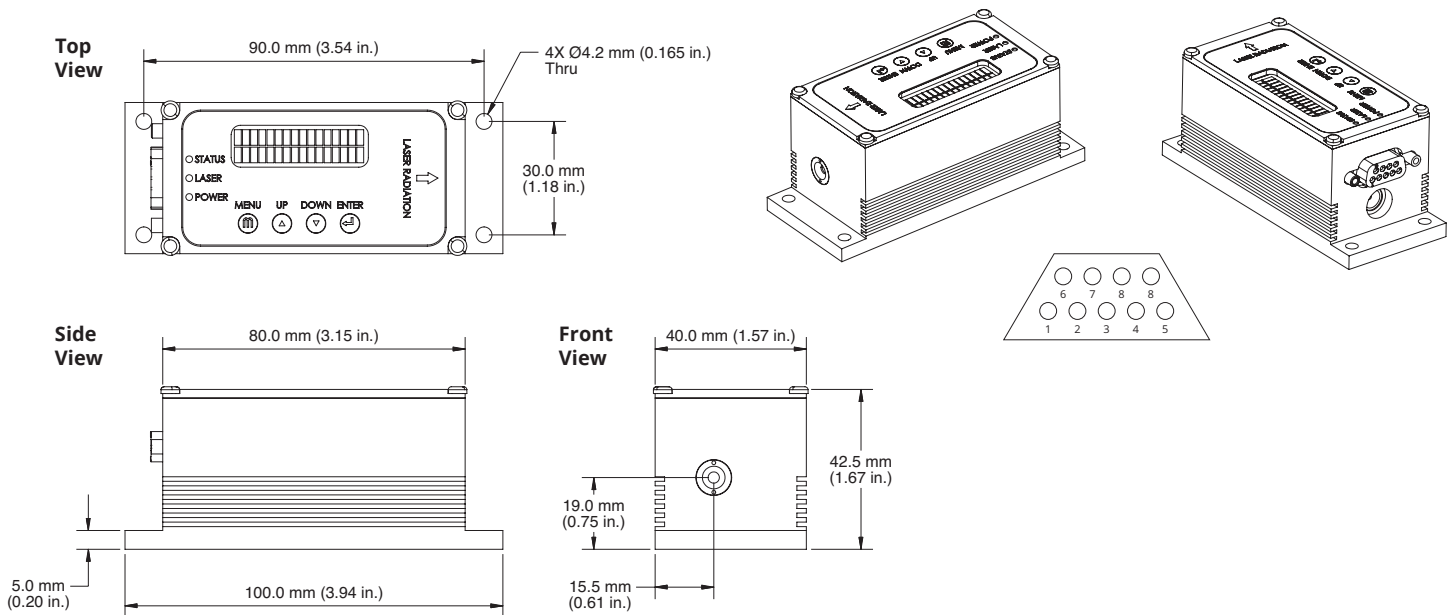
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| PINOUT ¹ | | |
|---------------------|------------|--|
| PIN | DEFINITION | DESCRIPTION |
| 1 | VCC | Positive Power Pin +3.3V |
| 2 | TXD | Send data to computer (RS-232) |
| 3 | RXD | Receive data from computer (RS-232) |
| 4 | | Not used |
| 5 | GND | GND for power and RS-232 communication |
| 6 | TTL | Outside TTL modulation |
| 7 | | Not used |
| 8 | | Not used |
| 9 | GND | GND for power and RS-232 communication |

¹ Pinout is compatible with standard RS-232 cable for interfacing with computer port or USB to RS-232 adapter.

MECHANICAL SPECIFICATIONS

LM Series Laser Module



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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 or contact your local Sales or Service Representative. MC-XXX-20-0M0520 Copyright ©2020 Coherent, Inc.