



GEM-50L

Liquid-Cooled RF-Excited OEM Industrial CO₂ Laser

A DIAMOND™ Family Laser

The GEM-50L Advantage

The RF-excited GEM™-50L OEM/Industrial Laser brings exceptional beam quality and superior amplitude stability to the OEM/industrial user in a super-compact package. In harsh environments where there are high dust and particulate levels, liquid cooling offers stable, robust operation.

The GEM-50L features an efficient folded-resonator design contained within an all-metal housing. It's a structural approach that gives the GEM-50L its outstanding beam quality and stability. Metal seals assure both long operational and shelf lifetimes. It is a robust and field-proven product.

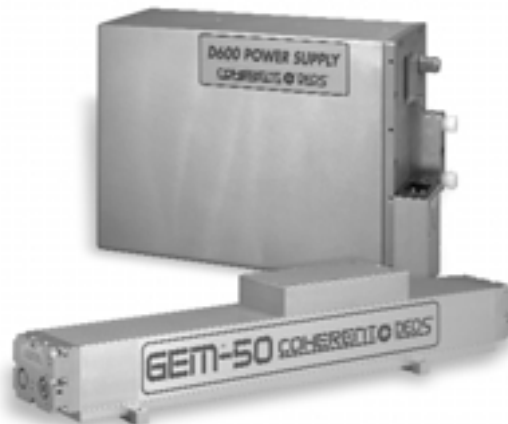
The all-solid-state RF power supply can be operated either CW or in a pulse-modulated mode, allowing the user a wide range of control over pulse power and pulse duration for process control. The RF power supply also includes an integrated DC supply. This feature allows the GEM-50L to operate from AC line voltages between 200 and 240 VAC. The RF power supply is connected to the laser head by an industrial-quality, triple-shielded RF cable. Custom lengths are available upon request. All laser heads, RF supplies and cables are interchangeable.

All control and monitoring signals are accessed through a 15-pin D-connector located on the front panel of the RF supply.

The superior performance of the GEM-50L laser is demonstrated in the high output per unit volume obtained with patent-protected technology.

FEATURES

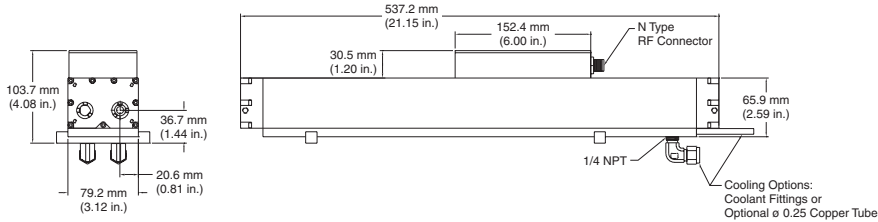
- **Outstanding beam quality and stability**
- **Highly compact and lightweight, two-piece package**
- **Integrated DC/RF supply – included!**
- **CW or pulse-modulated operation – to 25 kHz**
- **All-metal seals for long life**
- **Low-cost OEM configuration**
- **Interchangeable laser heads and RF supplies**
- **Linear polarization**
- **Wide operating power range**
- **Fast rise/fall time**
- **Up to 100% duty cycle operation**



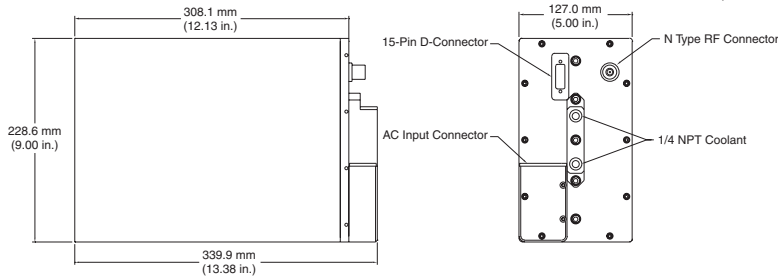
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Laser Head



Power Supply



		GEM-50L
System Specifications	Wavelength	10.6 μm Fixed
	Output Power ¹	50W
	Power Stability ²	±3%
	Mode Quality	>98% TEM ₀₀ , M ² <1.2
	Beam Size	1.8 ±0.2 mm
	Beam Divergence	7.5 ±0.5 mrad full angle
	Polarization	>100 to 1 (fixed linear)
	Pulse Frequency	TTL up to 25 kHz
	Weight of Head	6.6 kg (14.5 lbs.)
	Weight of Power Supply	7.3 kg (16.2 lbs.)
	Dimensions	Shown above
Facility Requirements	Input Power	200 to 240 VAC, 50 to 60 Hz, 7A
	Cooling	
	Heat Load	1300W (max.)
	Flow Rate	>1.5 gpm
	Temperature	15 to 30°C (59 to 86°F)
Coolant	Water +25% Dow Frost* Coolant	
Environmental	Temperature	5 to 45°C (41 to 113°F)
	Altitude	<2000 m (6500 ft.)
	Humidity	Non-condensing

¹ Derate power by 1% / °C for laser head temperatures above 25°C.

² Power stability measured at constant duty cycle after 10-minute warm-up.

Specifications are subject to change without notice. Protected under U.S. patents: 4,787,090; 4,577,323; 4,443,877; 4,438,514 and 4,393,126 with others pending. Licensed by PATLEX Corp. under U.S. Patent 4,704,583.

* Dow Frost is a trademark of the Dow Chemical Company.



COHERENT, INC.

5100 Patrick Henry Drive

Santa Clara, CA 95054

phone (800) 527-3786

(408) 764-4983

fax (800) 362-1170

(408) 988-6838

e-mail tech.sales@Coherent.com

web www.Coherent.com

Japan +81 (3) 5635 8700

Benelux +31 (30) 280 6060

France +33 (1) 6985 5145

Germany +49 (6071) 9680

Italy +39 (02) 34 530 214

UK +44 (1353) 658 833

Coherent, Inc. guarantees that the output power of the GEM-50L will exceed the rated power for a period of one year, independent of the actual operating time. Coherent, Inc. also warrants to the original purchaser for a period of one year from the date of delivery that the GEM-50L is free from defects in material and workmanship. The warranty does not apply to any unit damaged by accident, abuse or operation in a manner inconsistent with the procedures and specifications outlined in the manual supplied with the laser.

The GEM-50L is a laser component that does not include all safety features as required by the FDA and the Center for Devices and Radiological Health (CDRH). It is sold solely to qualified manufacturers who in their end product will supply all interlocks and indicators, and will comply fully with CDRH regulations and/or local regulatory agencies.

