

Helium-Neon Laser Tubes

098 and 1000 Series



The Lumentum 098 and 1000 series red helium-neon laser products offer low noise, high power stability, and long life for the most demanding applications. With millions of units sold, Lumentum lasers are the industry standard for many advanced system designs.

Lumentum manufactures helium-neon lasers in the red, green, yellow, and orange wavelengths. All feature our close-cathode design that rapidly and uniformly distributes discharge heat throughout the laser, resulting in excellent thermal, beam-pointing, and power stability. Our field concentrator design ignites the discharge within milliseconds of applying the start voltage. Hard-sealed internal mirrors, small physical size, and low noise result in greater reliability, longer life, and enhanced performance.

All Lumentum helium-neon lasers are manufactured in a dedicated facility using state-of-the-art process control technology. This enables us to achieve higher process yields, and results in dependable lead times and excellent on-time delivery performance.

Key Features

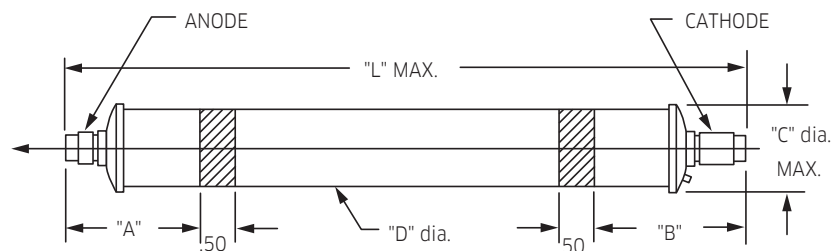
- Long operating life
- Low noise
- Exceptional beam-pointing stability
- Long-term amplitude stability

Applications

- Flow cytometry
- Metrology
- Semiconductor inspection
- Alignment
- Laser-induced fluorescence
- Hematology
- High-speed printing

098 and 1000 Series Dimension Diagram

(Specifications in mm unless otherwise noted.)



The beam exits from the anode mirror on all tubes except the 1018, 098-2 and 098-3.

Specifications

Parameter	1008/P	1007/P	098-0	1001/P	098-2	098-3	1003/P	1022	1018	Unit
Optical										
Minimum output power (TEM ₀₀)	0.5	0.8	1.0	1.5	2.0	2.0	2.0	2.0	2.5	mW
Wavelength	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8	nm
Beam diameter (1/e ² points, ±3%, TEM ₀₀)	0.48	0.48	0.75	0.63	0.49	0.49	0.63	0.63	0.55	mm
Beam divergence (TEM ₀₀ , 3%, mrad- full angle)	1.7	1.7	2.7	1.3	1.6	1.6	1.3	1.3	1.5	mrad
Polarization ratio (min. ; P versions)	NA/ 500:1	NA/ 500:1	NA	NA/ 500:1	NA	NA	NA/ 500:1	NA	NA	-
Longitudinal mode spacing (nominal)	1090	1090	640	730	647	647	730	730	822	MHz
Maximum noise (rms, 30 Hz to 10 MHz)	0.1	0.1	0.5	0.1	0.5	0.5	0.1	0.1	0.1	%
Maximum drift (mean power measured over 8 hours)	±5.0	±5.0	±5.0	±2.5	±5.0	±5.0	±2.5	±2.5	±2.5	%
Max. mode sweeping contribution	20	10	10	5	10	10	3	3	8	%
Max. warm-up time (minutes to 95% power)	10	10	15	10	15	15	10	10	10	min.
Operating voltage (V DC ±100)	1000	1000	1000	1400	1200	1200	1400	1300	1400	V DC
Operating current (±0.1 mA)	4.0	4.0	3.7	4.9	3.7	4.5	4.9	6.5	4.5	mA
Maximum starting voltage	7	7	10	10	10	10	10	10	7	kV DC
Dimensions										
L - Overall length	5.85	5.85	9.57	8.50	9.57	9.57	8.50	8.50	7.50	inches
D - Mounting diameter (±0.005 inches)	0.930	0.930	0.950	0.930	0.950	0.950	0.930	1.470	0.930	inches
C - Overall diameter	1.00	1.00	1.04	1.00	1.04	1.04	1.00	1.51	1.00	inches
B - Distance: cable end to mounting surface	1.60	1.60	1.00	2.00	1.00	1.00	2.00	1.50	1.80	inches
A - Distance: output end to mounting surface	1.40	1.40	1.00	1.80	1.00	1.00	1.80	1.50	2.00	inches
General (common to all models)										
Mode purity (TEM ₀₀)	>95%									
Storage lifetime	Indefinite (hard-sealed)									
Static alignment	Centered to mirror hub within 0.01 inch, parallel to mirror hub within 6 mrad									
Minimum required anode series resistance	60 KΩ ¹									
Environmental										
Temperature	-40 to 70°C (operating), -40 to 150°C (non-operating)									
Altitude	0 to 10,000 feet (operating), 0 to 70,000 feet (non-operating)									
Relative humidity (no condensation)	0 to 100%									
Shock	25 g for 11 ms, 100 g for 1 ms									

1. Optimum value varies, dependent upon supply design.

Ordering Information

For more information on this or other products and their availability, please contact your local Lumentum account manager or Lumentum directly at customer.service@lumentum.com.

Sample: 1008P

Warranty

Lumentum helium-neon laser systems are warranted to be free of defects in workmanship and materials for twelve months from the date of shipment.

Regulatory Compliance

The 098 and 1000 Series laser tubes described herein have not been certified with CDRH and are to be used only as components. The customer is responsible for CDRH certification of all systems sold with these products. Contact your local Lumentum sales representative for additional information on specific products or configurations.



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