

## Helium-Neon Laser Tubes

### 098 and 1000 Series

**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

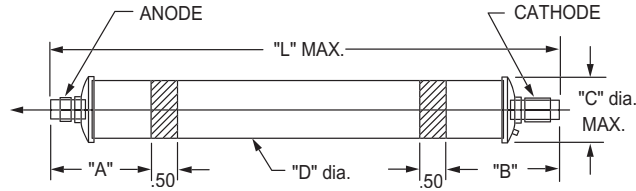
The JDSU 098 and 1000 series red helium-neon laser products offer low noise, high power stability, and long life for the most demanding applications. With millions of units sold, JDSU lasers are the industry standard for many advanced system designs.

JDSU manufactures helium-neon lasers in the red, green, yellow, and orange wavelengths. All feature our patented close-cathode design that rapidly and uniformly distributes discharge heat throughout the laser, resulting in excellent thermal, beam-pointing, and power stability. Our patented 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 JDSU 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.

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**098 and 1000 Series Dimension Diagram** (Specifications in inches 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
<b>Optical</b>										
Minimum output power (TEM <sub>00</sub> )	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 <sup>2</sup> points, ±3%, TEM <sub>00</sub> )	0.48	0.48	0.75	0.63	0.49	0.49	0.63	0.63	0.55	mm
Beam divergence (TEM <sub>00</sub> , 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
<b>Dimensions</b>										
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
<b>General (common to all models)</b>										
Mode purity (TEM <sub>00</sub> )	>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 <sup>1</sup>									
<b>Environmental</b>										
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 JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at [customer.service@jdsu.com](mailto:customer.service@jdsu.com).

**Sample: 1008P**

**Warranty**

JDSU 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 JDSU sales representative for additional information on specific products or configurations.



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