

## Green, Yellow and Orange Helium-Neon Lasers

### 1600 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

#### Compliance

- CDRH 1040.10
- CE

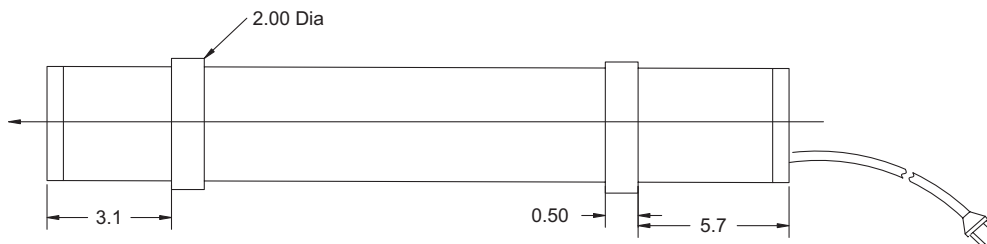
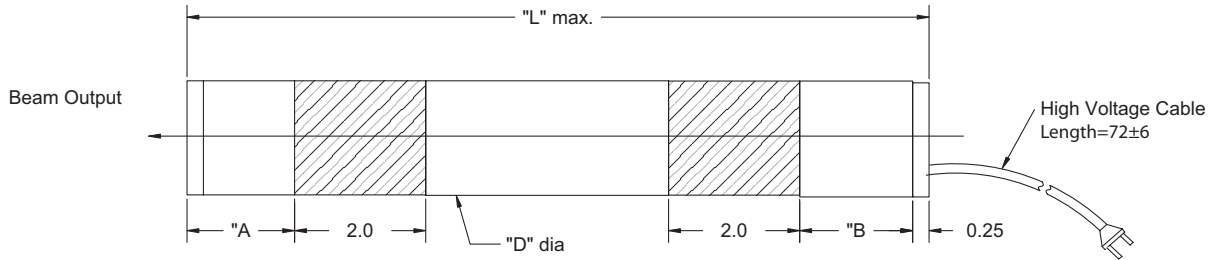
The JDS Uniphase 1600 Series green, yellow, and orange helium-neon laser products offer low noise, high power stability, and long life for the most demanding applications. With millions of units sold, JDS Uniphase lasers are the industry standard for many advanced system designs.

JDS Uniphase 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.

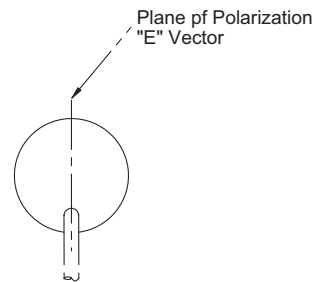
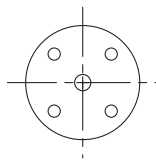
All JDS Uniphase helium-neon lasers are manufactured in a dedicated facility using state-of-the-art process control technology. This enables us to achieve higher process yields, and results in dependable lead times and excellent on-time delivery performance.



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**1600 Series Laser Heads**
**Specifications in inches unless otherwise noted.**

**M and M/P Versions**

Accessory Housing Holes:  
M-3 on 1.38" (34.9 mm) bolt circle  
(1.74" diameter head only)





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#### Optical Specifications

Parameter	1652/ 1652P	1653	1654	1673M /1673MP	1674M /1674MP	1677 /1677P	1679P
<b>Optical</b>							
Minimum output power (TEM <sub>00</sub> , mW)	0.25	0.50	0.75	0.50	0.75	2.0	3.0
Wavelength (nm)	543.5	543.5	543.5	543.5	543.5	594	612
Mode purity (TEM <sub>00</sub> , %)	>95	>95	>95	>95	>95	>95	>95
Beam diameter (I/e <sup>2</sup> points, ±3%, TEM <sub>00</sub> , mm)	0.70	0.70	0.70	0.80	0.80	0.73	0.74
Beam divergence (TEM <sub>00</sub> , ±3%, mrad)	0.98	0.98	0.98	0.86	0.86	1.0	1.0
Polarization ratio (Minimum, P versions)	N/A / 500:1	N/A	N/A	N/A / 500:1	N/A / 500:1	N/A / 500:1	N/A
Longitudinal mode spacing (TEM <sub>00</sub> only, MHz)	441	441	441	325	325	N/A	N/A
Max. noise <sup>1</sup> (rms, 30 Hz to 10 MHz, %)	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Maximum drift (mean powermeasured over 8 hours, %)	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5
Max. mode sweep contribution (%)	±3	±3	±3	±3	±3	±10	±5
Maximum. warm-up time (minutes to 95% power)	15	15	15	30	30	15	15
Beam pointing stability (from cold start, 25 °C, mrad)	<0.10	<0.10	<0.10	<0.20	<0.20	<0.10	<0.10
Beam pointing stability (after 15 min warm up, mrad)	<0.02	<0.02	<0.02	<0.03	<0.03	<0.02	<0.02
Operating voltage (V DC ±100)	2250	2250	2250	2700	2700	2250	2350
Operating current (±0.1 mA)	5.5	5.5	5.5	5.0	5.0	5.5	5.5
<b>Dimensions</b>							
L-overall length (inches)	15.79	15.79	15.79	19.13	19.13	15.79	15.79
D-mounting diameter (±0.005 inches)	1.740	1.740	1.740	1.740	1.740	1.740	1.740
B-distance: cable end to mounting surface (inches)	3.00	3.00	3.00	4.00	4.00	3.00	3.00
A-distance: output end to mounting surface (inches)	3.00	3.00	3.00	4.00	4.00	3.00	3.00
CDRH class (head & 1200 Series power supply)	2	2	3a	2	3a	3a	3a
<b>General</b>							
Maximum starting voltage	10 kV DC						
Storage lifetime	Indefinite (hard-sealed)						
Static alignment	Center to outer cylinder within ±0.01 inch. Parallel to outer cylinder within ±1 mrad.						
<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 (non-condensing)	0 to 100%						
Shock	25 g for 11 ms, 100 g for 1 ms						
<b>Physical</b>							
Shipping weight	5 lb. (1600 Series head); 10 lb. (1600 Series head and 1200 Series power supply)						

1. When used in conjunction with JDS Uniphase "T" Series power modules



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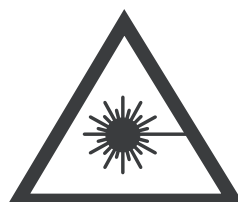







## Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase account manager or JDS Uniphase directly at 1-800-254-3684 in North America and +800-5378-JDSU worldwide or via e-mail at sales@jdsu.com.

**Sample: 1675MP**

## Warranty

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

 LASER RADIATION IS EMITTED FROM THIS APERTURE AVOID EXPOSURE	 <b>LASER RADIATION</b> DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENT CLASS 2 LASER PRODUCT (IEC) CLASS II LASER PRODUCT (CDRH) 543.5 nm / 4 mW	 Europe-IEC	
 LASER RADIATION IS EMITTED FROM THIS APERTURE AVOID EXPOSURE	 <b>LASER RADIATION</b> DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENT CLASS 3B LASER PRODUCT (IEC) CLASS IIIa LASER PRODUCT (CDRH) 543.5 nm / 4 mW		 US-CDRH
 LASER RADIATION IS EMITTED FROM THIS APERTURE AVOID EXPOSURE	 <b>LASER RADIATION</b> DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENT CLASS 3B LASER PRODUCT (IEC) CLASS IIIa LASER PRODUCT (CDRH) 594 nm / 4 mW		
 LASER RADIATION IS EMITTED FROM THIS APERTURE AVOID EXPOSURE	 <b>LASER RADIATION</b> <b>AVOID EXPOSURE TO BEAM</b> CLASS 3B LASER PRODUCT (IEC) CLASS IIIa LASER PRODUCT (CDRH) 612 nm / 4 mW		

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**Regulatory Compliance**

The products listed in this bulletin may comply to one or more of the following regulatory standards, and display one or more of the safety labels shown below. Contact your local JDS Uniphase sales representative for additional information on specific products or configurations.



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