ti100 CO2 Laser

Compact laser with more than 100 Watts of average power for high-speed marking, cutting and 3D printing applications

Industrial CO2 laser engineered for high performance and power at 9.3 μm, 10.2 μm, and 10.6 μm wavelengths

• Improve marking, engraving, cutting, and SLS printing throughput with over 100 W average power regardless of wavelength
• Ensure efficient energy delivery and better throughput with fast rise/fall times
• Utilize space efficiently with the compact footprint consistent across all the ti series lasers
• Choose the most effective and economical cooling option for your system: available in fan or water-cooled models
• Patented taper technology enables a hybrid unstable and waveguide resonator to maximize optical efficiency and power output at all CO2 wavelengths
• Optimize you application: available in multiple CO2 wavelengths, pulsed, CW, and in a high stability package

Maximize Design Flexibility

The consistent beam exit height across all lasers in the ti Series enables easy upgrading of laser power for laser processing equipment. OEMs can now offer their customers more upgrade options without extensive reengineering costs.

Specifications

Output Specifications

<table>
<thead>
<tr>
<th>Wavelength</th>
<th>9.3 μm</th>
<th>10.2 μm</th>
<th>10.6 μm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Power (^1)</td>
<td>&gt;100 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Stability (cold start) (^2)</td>
<td>±7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Stability (typical, after 3 min.)</td>
<td>±6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beam Diameter (^3)</td>
<td>2.0 mm ± 0.3 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divergence (full angle)</td>
<td>&lt;7.0 mrad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ellipticity</td>
<td>&lt;1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarization</td>
<td>Linear (Vertical)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rise Time</td>
<td>&lt;75 μs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Frequency</td>
<td>0 - 160 kHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Supply

DC Input Voltage | 48 VDC |
Maximum Current | 35.0 A |

Cooling

Maximum Heat Load | 1700 W |
Guaranteed with fan shroud (air): <40° C (air), 18-22° C (water) |
Minimum Flow Rate | 1.0 GPM, <60 PSI (water) |

Environmental

Operating Ambient Temperature | 15 - 40° C |
Maximum Humidity | 95%, non-condensing |

Physical

<table>
<thead>
<tr>
<th>Water</th>
<th>Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L) mm (inches)</td>
<td>584 (23)</td>
</tr>
<tr>
<td>Dimensions (W) mm (inches)</td>
<td>143 (5.6)</td>
</tr>
<tr>
<td>Dimensions (H) mm (inches)</td>
<td>150 (5.9)</td>
</tr>
<tr>
<td>Weight kg (lbs.)</td>
<td>11.9 (26)</td>
</tr>
</tbody>
</table>

1 - Power level guaranteed for 2 years from date of shipment, regardless of operating hours, within recommended coolant flow rate and temperature range.
2 - Measured from cold start as \((P_{\text{max}} - P_{\text{min}})/(P_{\text{max}} + P_{\text{min}})\)
3 - Measured 1/e² diameter at laser output.

SYNRAD
A Novanta Company
**ti100 CO₂ Laser**

**Technical Illustrations**  
Dimension are in mm (inches)  
Outline and mounting drawing for the water-cooled model is available on the Synrad website at:  

**Fan-Cooled**

100 W of power and fast rise/fall times ensure clean, crisp cutting. Multiple wavelength options enable cutting across a wide range of materials.

**Recommended Applications**

- **General Cutting**
  - 100 W of power and fast rise/fall times ensure clean, crisp cutting. Multiple wavelength options enable cutting across a wide range of materials.

- **High Speed Coding**
  - Perfectly suited for high speed production lines where permanent marks and codes are required to ensure product quality and traceability.

- **3D Printing**
  - Highly recommended for 3D SLS printing, patented taper technology maximizes optical efficiency and power output.

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