p400 CO2 Laser

Industrial pulsed laser with more than 1 kW of peak power for high speed drilling, perforating, and cutting applications

High performance pulsed CO2 laser engineered to maximize production throughput and yield for a wide range of materials processes

• 1 kW of peak pulse power for precise perforating, drilling and cutting applications

• 400 W of average power delivers higher throughput and production yields across a wide variety of target materials

• Unmatched application flexibility with user controlled pulse/continuous wave operation modes

• Real-time performance monitoring reduces unplanned downtime with onboard advanced diagnostics that are Industry 4.0 ready

• Compact, lightweight design easily integrates onto a variety of in-line and stand-alone processing systems

Specifications

Output Specifications

<table>
<thead>
<tr>
<th>Wavelength, µm</th>
<th>10.6 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Output Power¹</td>
<td>&gt;400 W</td>
</tr>
<tr>
<td>Peak Pulse Power (typical)²</td>
<td>1 kW</td>
</tr>
<tr>
<td>Peak Pulse Energy (maximum)³</td>
<td>1.0 J</td>
</tr>
<tr>
<td>Power Stability (cold start)⁴</td>
<td>±7%</td>
</tr>
<tr>
<td>Power Stability (typical, after 3 min.)</td>
<td>±5%</td>
</tr>
<tr>
<td>Beam Quality (M²)</td>
<td>&lt;1.2</td>
</tr>
<tr>
<td>Beam Size Options</td>
<td>Option 1: 6.5 mm ± 1.0 mm, Option 2: 9.0 mm ± 1.0 mm</td>
</tr>
<tr>
<td>Divergence (full angle)</td>
<td>2.5 mrad ± 0.6 mrad, 1.8 mrad ± 0.4 mrad</td>
</tr>
<tr>
<td>Ellipticity</td>
<td>&lt;1.2</td>
</tr>
<tr>
<td>Polarization</td>
<td>Linear (45°)</td>
</tr>
<tr>
<td>Rise/Fall Time³</td>
<td>&lt;50 µs/100 µs</td>
</tr>
<tr>
<td>Operating Frequency</td>
<td>0 - 100 kHz</td>
</tr>
<tr>
<td>Duty Cycle Range</td>
<td>≤ 50%</td>
</tr>
<tr>
<td>Maximum Pulse Length</td>
<td>1.0 ms</td>
</tr>
</tbody>
</table>

Power Supply

| DC Input Voltage | 48 VDC |
| Maximum Current | 175 A |
| Pulsed Current | 300 A for ≤ 1 ms |

Cooling

| Maximum Heat Load | 8.5 kW |
| Coolant Temperature | 18 - 22°C (water) |
| Minimum Flow Rate | 4.0 GPM, <60 PSI |

Environmental

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

Physical

| Dimensions (LxWxH) mm (inches) | 1262 x 208 x 300 (49.7 x 8.2 x 11.8) |
| Weight | 59.0 kg (130 lbs.) |

1 - Power level guaranteed for 2 years from date of shipment, regardless of operation hours, within recommended coolant flow rate and temperature range.
2 - Measured at 1 kHz, 10% duty cycle
3 - Measured from average power at 100 Hz, 10% duty cycle.
4 - Measured as (Pmax-Pmin)/(Pmax+Pmin) from cold start at 5 kHz, 50% duty cycle.
5 - Measured 1/e² diameter at laser output
6 - Measured at 1 kHz, 10% duty cycle.

Specifications are subject to change without notice.

Protective Laser Radiation
Avoid eye or skin exposure to direct or scattered radiation
Class 4 Laser Product.

A Novanta Company
**p400 CO2 Laser**

Outline and Mounting Illustrations  
Dimensions are in mm (inches)

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**Recommended Applications**

**Cutting**

400 W continuous output power and 1 kW peak power combine to drive faster throughput for higher production yields on plastics, wood, composites, thin metals, and other materials.

**Drilling**

High peak and average power deliver the perfect laser for quality, high speed drilling and scribing applications on a wide variety of materials, including ceramics.

**Perforating**

1 kW peak power delivers energy more efficiently, increasing perforating or drilling speeds and reducing HAZ; a solid solution for laser finishing processes on automated packaging lines.

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