

p400 CO₂ Laser

Get faster laser processing throughput for higher production yields, across a wide range of target materials with a 400 watt laser



Take precise laser perforating, drilling, and cutting to the next level

- 400 W of average power delivers higher production yields across a wide variety of target materials
- 1 kW of peak pulse power for precise perforating, drilling and cutting applications
- 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



Precise Thin Metal Cutting



Superior Edge Cut Quality on a Wide Variety of Materials

With 400 watts of average power, and 1 kW of peak pulse power the p400 delivers high cut quality with faster processing speeds. The unique user switchable pulse/continuous wave modes makes the p400 the most versatile laser source available. Easier field serviceability with a modular electronics package make the p400 the first choice for high speed industrial processing systems.

Specifications

Output Specifications		
Wavelength, μm	10.6 \pm 0.1	
Peak Pulse Power (typical) ¹	>1 kW	
Power Output, continuous ²	>400 W	
Peak Pulse Energy (maximum) ³	1.0 J	
Pulse Length (max)	1 millisecond	
Pulse Frequency	Up to 100 kHz	
Rise Time/Fall Time 10% 1kHz (typical)	60 μs /110 μs typ	
Duty Cycle Limit	<50%	
Power Stability	From cold: < \pm 7%	
Mode Quality (M ²)	<1.2	
Beam Size Options	Option 1	Option 2
Beam Waist Diameter, mm (at 1/e ²) ⁴	6.0 \pm 1.0 mm	8.0 \pm 1.0 mm
Beam Diameter at Faceplate (at 1/e ²) ⁴	6.5 \pm 1.0 mm	9.0 \pm 1.0 mm
Beam Divergence (full angle in mrad 1/e ²) ⁴	2.5 \pm 0.6 mrad	1.8 \pm 0.4 mrad
Ellipticity near field 45% 1 kHz and 5 kHz	<1.2	
Ellipticity far field	<1.2	
Polarization	Linear 45 degrees	
Input Specifications		
Power Supply Voltage/Current	48 VDC \pm 0.5 VDC/175 A	
Pulsed Current	300 A for 1 millisecond	
Cooling Specifications		
Heat Load (max)	8.5 kW	
Maximum Chassis Operating Temperature	55° C	
Cooling	Water (18 - 22° C)	
Flow-rate	4 GPM, < 60 psi	
Environmental Specifications		
Operating Ambient Temperature Range	15 - 40° C	
Humidity	0 - 95%, non-condensing	
Physical Specifications		
Dimensions (LxWxH) Inches (mm)	48.3 x 8.2 x 12.5 (1226.8 x 208.3 x 317.5)	
Weight lbs. (kg)	130 lbs. (59.0 kg)	

1 - Measured at 1 kHz, 10% duty cycle

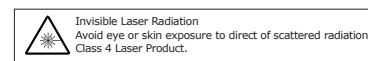
2 - Power level guaranteed for 24 months from date of shipment, regardless of operation hours within recommended coolant flow rate and temperature range

3 - Tested at 100 Hz, 10% duty cycle

4 - Measured at 5kHz, 45% duty cycle

Note: Published specifications guaranteed at a temperature of 22° C. Some performance degradation may occur in ambient temperatures above 22° C. For air-cooled lasers, laser power typically decreases 0.5 - 1% per degree Celsius increase in ambient temperature.

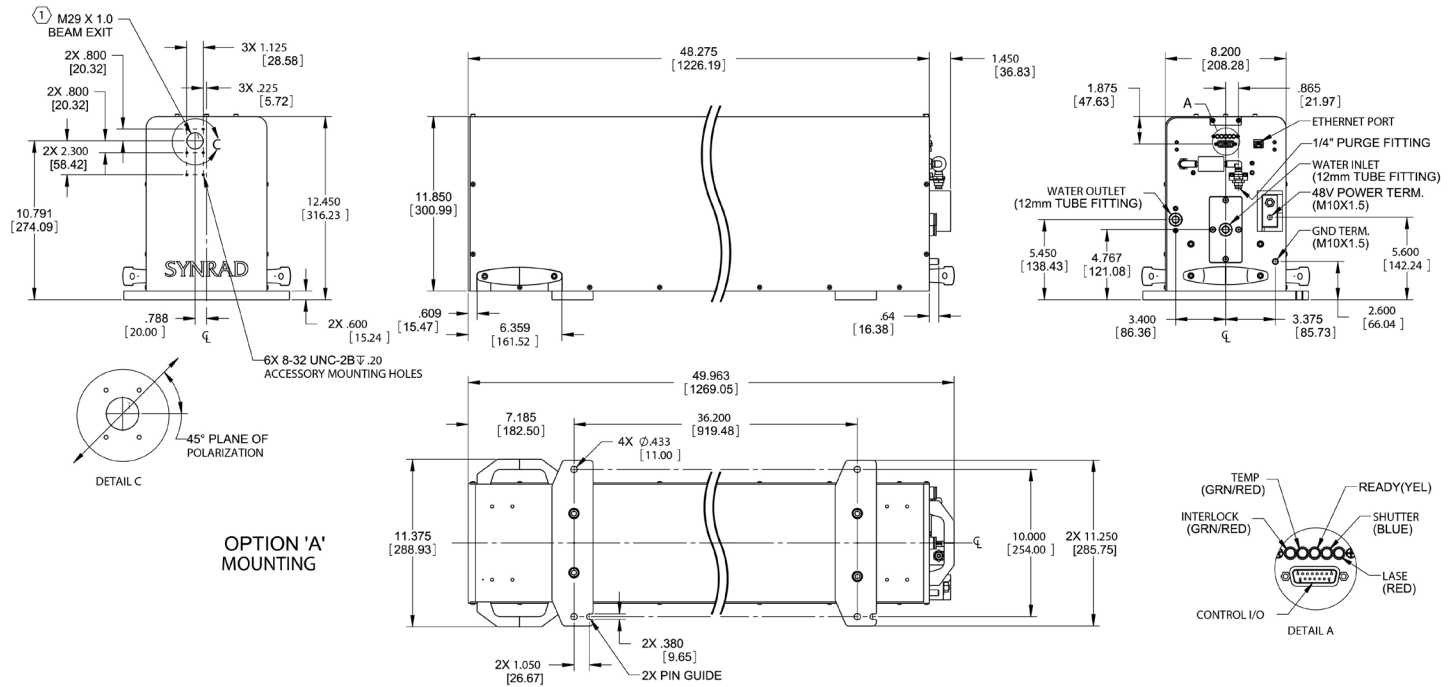
Specifications are subject to change without notice.



SYNRAD
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p400 CO₂ Laser

Outline and Mounting Illustrations dimensions are in inches [mm]



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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