

Pulstar p400 – Pulsed CO₂ Industrial Laser



> 1000 W peak pulsed power

400 W average power

Superb power stability

Modular electronics packaging

Synrad performance & reliability

Introducing the new Pulstar p400, the largest in the Pulstar pulsed laser family - with 1 kW peak power.

Synrad proudly introduces the newest addition to highly acclaimed **Pulstar** laser family. Available in 10.2 and 10.6 wavelengths, the **p400** addresses customer needs for a higher power pulsed laser for greater versatility, faster processing speeds, and exceptional beam quality combined with high average power and high peak power for superior cut edge quality. We delivered all their requirements, plus some, with the new **Pulstar p400**. Based on the proven technology of the Firestar i401, the **p400** is a package of best-in-class power stability, high peak and high pulsed power, and easier field serviceability with a modular electronics package, remote monitoring capabilities, a physical shutter option and other features for increased safety during its operational lifetime.

Designed to fit within the same footprint, customers currently working with the highly celebrated Firestar i401 can easily make the step up to the **p400's** pulsed power and faster processing speeds.

Pulstar p400 Features and Benefits:

Feature	Benefit
Peak pulse power of >1.0 kW	Piercing thicker metals for processing, decreased HAZ on leather and plastics
Average output power of >400 W	Faster processing speed for cutting
Max pulse energy of 1000 mJ	Faster processing speed for piercing, drilling, perforating
Max pulse width of 1000 μs	Deep drilling, mild steel cutting, deep engraving
Fast rise time of <50 μs	High quality pulse-to-pulse performance in converting applications e.g. for producing circular holes
Power stability of ±5% (after 3 mins)	Consistency in materials processing
Duty cycle range up to 50%	Expanding materials processing window by offering a range of peak and average powers with one laser

Specifications:

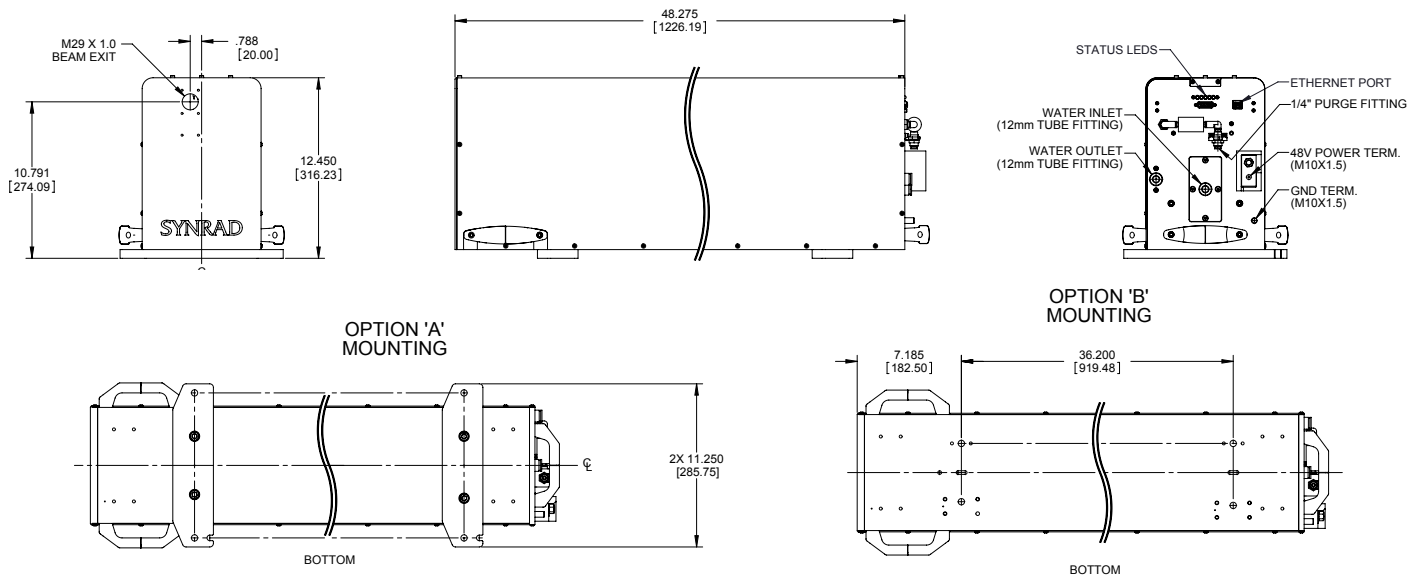
Model	p400 10.2 or 10.6 Wavelengths	
Peak Pulse Power (typical) ⁽¹⁾	>1.0 kW	
Average Output Power (minimum) ⁽²⁾	400 W	
Wavelength (typical) ⁽³⁾	10.25μm±0.1μm	10.6μm±0.1μm
Pulse Energy (maximum) ⁽⁴⁾	1.0 J	
Pulse Length (maximum)	1000 μs	
Rise Time / Fall Time ⁽⁵⁾	< 50 μs / < 100 μs	
Power Stability from Cold Start (typical) ⁽⁶⁾	± 7%	
Power Stability after 3 Minutes (typical) ⁽⁶⁾	± 5%	
Duty Cycle Range	<50%	
Operating Frequency Single Shot to	100 kHz	
	Option 1	Option 2
Beam Waist Diameter (at 1/e ²) ⁽⁶⁾	6.0 mm ± 1.0 mm	8.0 mm ± 1.0 mm
Beam Diameter at Faceplate (at 1/e ²) ⁽⁶⁾	6.5 mm ± 1.0 mm	9.0 mm ± 1.0 mm
Beam Divergence, Full Angle, (at 1/e ²) ⁽⁶⁾	2.5 mrad ± 0.6 mrad	1.8 mrad ± 0.4 mrad
Mode Quality ⁽⁶⁾	M ² ≤ 1.2	
Ellipticity ⁽⁶⁾	<1.2	
Polarization	Linear (45 Degrees)	
Cooling ⁽⁷⁾	Water (18-22° C)	
Heat Load (maximum)	8.5 kW	
Flowrate	4.0 GPM, < 60 PSI	
Input Voltage / Current (maximum)	48VDC / 175A	
Peak / RMS Currents - Amps	300A (for >1.0 ms)	
Dimensions (inches)	49.7 x 8.2 x 12.5	
Dimensions (mm)	1262 x 208 x 318	
Weight	130.0 lbs / 59.0 kg	

Specifications subject to change without notice.

- 1 Measured at 1 kHz, 10% duty cycle
- 2 Power level guaranteed for 24 months from date of shipment, regardless of operating hours, within recommended coolant flow rate & temperature range.
- 3 Typical wavelength band for 10.6μm nominal, but laser can operate in 10.2μm to 10.7μm range
- 4 Tested at 100 Hz, 10% Duty Cycle
- 5 Rise Time tested at 100Hz, 10% Duty Cycle / Fall Time tested at 1kHz, 10% Duty Cycle
- 6 Measured at 5 kHz, 50% Duty Cycle
- 7 At coolant temperatures above 22°C, derate power 0.5 W/°C to 1 W/°C up to a coolant temperature of 28°C

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Outline and Mounting:



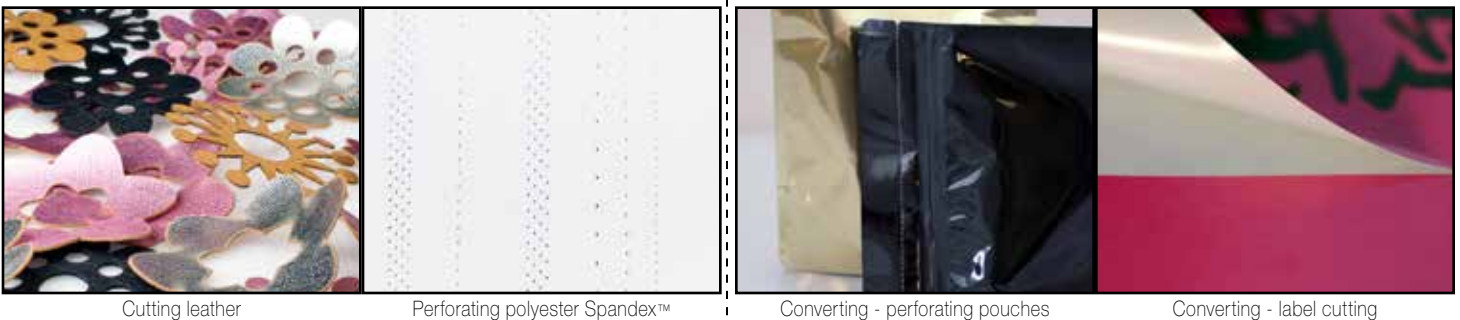
Typical Applications:

X-Y Multi-Purpose Cutting Tables: The pulsed power of the **p400** allows the flexibility to cut plastics, wood, composites and other materials, even thin metals (including steel), and scribing/drilling/cutting ceramics - a truly multi-purpose laser.



High Speed Textile/Leather Cutting Systems: Typically used with a Galvo scan head, these systems can process a variety of fabrics, foams and leathers used in the garment industry. By nature these materials can char easily when cut, but this can be greatly reduced by using a pulsed laser to more efficiently deliver the energy—providing cleaner, sharper cuts and better results.


Converting: With the peak power the 10.2 model, the **p400** it is optimal for high-speed processing in the flexible and rigid packaging markets; and the optimal power stability is ideal for consistent precision cutting of label materials.



These are only some examples of potential uses for the **Pulstar p400**.
Contact your Synrad Representative to determine the best laser for your applications.

To learn more about the p400, scan here with your smartphone, or visit: <http://www.synrad.com/pseries/p400>



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

