

Pulstar p150 – Pulsed CO₂ Industrial Laser



Pulstar
series
P150

600 W peak pulse power

150 W average power

Exceptional beam quality

Superior power stability

Synrad performance & reliability

Meet the Pulstar p150 pulsed laser—a fast, versatile laser with a superior cut edge quality.

Another pivotal member of the Pulstar pulsed laser family is the **p150**. Featuring 600 W of peak pulsed power (typical) and over 150 W of average power, the **p150** is ideally suited for a wide variety of pulsed applications where superior edge quality, faster processing speeds, exceptional beam quality, and minimal heat affected zone (HAZ) is crucial to your manufacturing success.

The **p150** outperforms the competition in critical areas of power stability, pulse energy combination of high average/high peak powers at up to 600µs long pulses, fast rise time, size, weight and power (SWaP) budget. These performance advantages enable cutting of thin steel, plastics, ceramic scribing/drilling as well as a variety of converting applications.

Pulstar p150 Features and Benefits:

Feature	Benefit
Peak pulse power of 600 W (typical)	Piercing thin steel for processing, decreasing HAZ on leather, plastics, and drilling ceramics without fracturing and high speed drilling
Average output power of >150 W	Faster processing speed for cutting
Peak pulse energy of 335mJ	Faster processing speed for piercing, drilling, perforating
Max pulse width of 600µs	Deep drilling, thin steel cutting, scribing ceramics
Fast rise time of 50µs	High quality pulse-to-pulse performance in converting applications and for producing circular holes
Power stability of ±5% (from cold start)	Consistency in materials processing
Duty cycle range from 0% to 37.5%	Expanding materials processing window by offering a range of peak and average powers with one laser
M2<1.2	High quality perforations and scribing due to small spot-size, high energy density and longer working distance tolerance
Compact footprint and lightweight	Ease of mounting in OEM systems, handling
Built in gas/clean dry air purge port	Easier to install purge to protect laser from contamination and ensure longer lifetimes in harsh environments
Protection window	Reliable operation in harsh environments

Specifications:

Model	9.3µm	10.2µm	10.6µm
Peak Pulse Power (typical) ⁽¹⁾	600 W	600 W	600 W
Average Output Power (minimum) ⁽²⁾	150 W	150 W	150 W
Wavelength (typical) ⁽³⁾	9.3µm ± 0.1µm	10.25µm ± 0.1µm	10.60µm ± 0.1µm
Peak Pulse Energy (maximum) ⁽⁴⁾	335mJ	335mJ	335mJ
Pulse Length (maximum)	600µs	600µs	600µs
Rise Time / Fall Time ⁽⁵⁾	< 50µs / < 100µs	< 50µs / < 100µs	< 50µs / < 100µs
Power Stability from Cold Start (typical) ⁽⁶⁾	± 5%	± 6%	± 6%
Power Stability after 3 Minutes (typical) ⁽⁶⁾	± 3%	± 3%	± 3%
Duty Cycle Range	<37.5%	<37.5%	<37.5%
Operating Frequency Single Shot to	200 kHz	200 kHz	200 kHz
Beam Waist Diameter (at 1/e ²) ⁽⁶⁾	8.0mm ± 1.1mm	8.0mm ± 1.1mm	8.0mm ± 1.1mm
Beam Diameter at Faceplate (at 1/e ²) ⁽⁶⁾	8.5mm ± 1.0mm	8.5mm ± 1.0mm	8.5mm ± 1.0mm
Beam Divergence Full Angle, (at 1/e ²) ⁽⁶⁾	1.9 mrad ± 0.4 mrad	1.9 mrad ± 0.4 mrad	1.9 mrad ± 0.4 mrad
Mode Quality ⁽⁶⁾	M ² ≤ 1.2	M ² ≤ 1.2	M ² ≤ 1.2
Ellipticity ⁽⁶⁾	<1.2	<1.2	<1.2
Polarization	Linear (Vertical)	Linear (Vertical)	Linear (Vertical)
Cooling ⁽⁷⁾	Water (18-22° C)	Water (18-22° C)	Water (18-22° C)
Heat Load (maximum)	3200 W	3200 W	3200 W
Flowrate	1.5-2.0 GPM <60 PSI	1.5-2.0 GPM <60 PSI	1.5-2.0 GPM <60 PSI
Input Voltage / Current (maximum)	48VDC / 50A	48VDC / 50A	48VDC / 50A
Peak / RMS Currents Amps	100A (for < 700µs) / 65A	100A (for < 700µs) / 65A	100A (for < 700µs) / 65A
Dimensions (inches)	31.4 x 5.2 x 6.1	31.4 x 5.2 x 6.1	31.4 x 5.2 x 6.1
Dimensions (mm)	798 x 132 x 155	798 x 132 x 155	798 x 132 x 155
Weight	40.0 lb / 18.1 kg	40.0 lb / 18.1 kg	40.0 lb / 18.1 kg

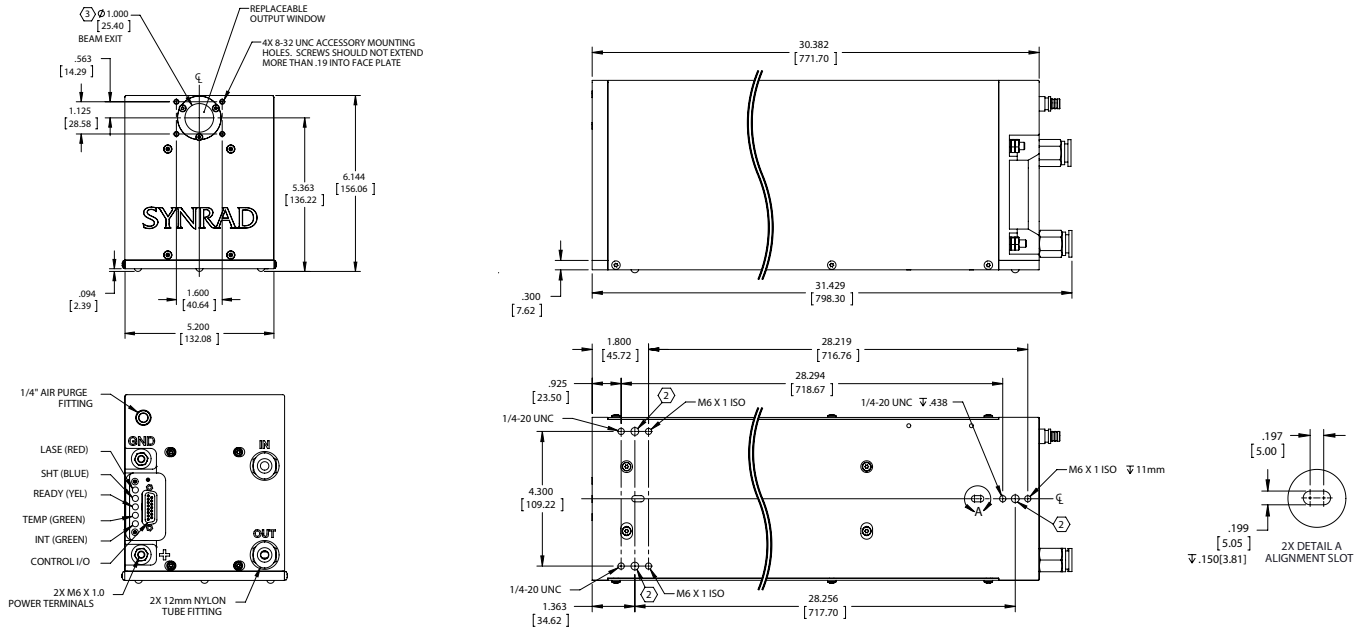
Specifications subject to change without notice.

- 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 625Hz, 37.5% Duty Cycle
- 5 Rise time tested at 1 kHz, 10% Duty Cycle
- 6 Measured at 5 kHz, 37.5% Duty Cycle
- 7 At coolant temperatures above 22°C, allow power drop of 0.5% /°C to 1% /°C up to a coolant temperature of 28°C.

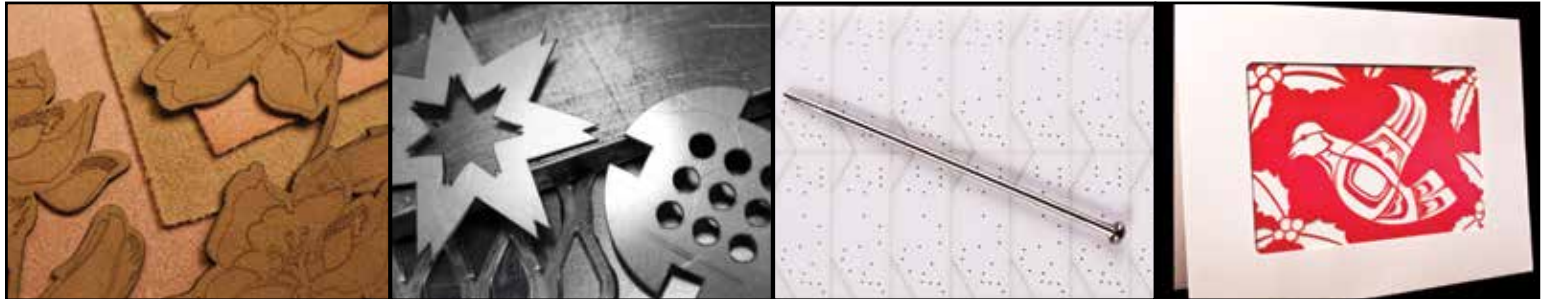
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Outline and Mounting:



Typical Applications:

X-Y Multi-Purpose Cutting Tables: The p150 10.6µm is well-suited for small multi-purpose cutting environments. A small size profile allows for easy placement on a gantry and high peak power enables it to efficiently process leathers, thin steels, paper and ceramics.



Cutting leather

Cutting thin steels

Cutting ceramics

Cutting paper

Converting and Complex Film Processing: The p150 9.3µm is adept at cutting electronic films for mobile/LCD display applications. The high stability allows for very consistent selective cutting of film layers while high peak power minimizes melt lips on the cut edges. The p150 10.2µm is ideally suited for cutting, drilling, and selective perforating of food packaging films. These processes can be performed at high speed due to its high peak power. Pulstar p150's multiple wavelength options make it a versatile tool for label-cutting applications.



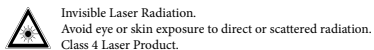
Cutting electronic films

Converting - perforating pouches

Cutting plastic labels

Microperforating food packaging

Note: These are only some examples of potential uses for the Pulstar p150. Contact your Synrad Representative to determine the best laser for your applications.



To learn more about the Pulstar p150, scan here

