

ti80 CO₂ Laser

Compact laser with more than 80 Watts 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 3D printing throughput with over 80 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 air, fan, or water-cooled models
- Maximize design flexibility with consistent beam exit height across all lasers in the ti and vi series
- Patented taper technology enables a hybrid unstable and waveguide resonator to maximize optical efficiency and power output at all CO₂ wavelengths
- Optimize your application: available in multiple CO₂ wavelengths, cooling options, and in a high stability package



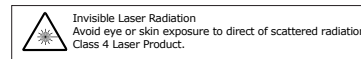
Maximize Design Flexibility

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			
Wavelength	9.3 μm	10.2 μm	10.6 μm
Output Power ¹	>80 W		
Power Stability (cold start) ²	±7%		
Power Stability (typical, after 3 min.)	±6%		
Beam Quality (M ²)	<1.2		
Beam Diameter ³	2.0 mm ± 0.3 mm		
Divergence (full angle)	<7.0 mrad		
Ellipticity	<1.2		
Polarization	Linear (Vertical)		
Rise Time	<75 μs		
Operating Frequency	0 - 160 kHz		
Power Supply			
DC Input Voltage	48 VDC		
Maximum Current	22.0 A		
Cooling			
Maximum Heat Load	1200 W		
Coolant Temperature	<40° C (air), 18-22° C (water)		
Minimum Flow Rate	190 CFM, 2 required (air) 1.0 GPM, <60 PSI (water)		
Environmental			
Operating Ambient Temperature	15 - 40° C		
Maximum Humidity	95%, non-condensing		
Physical			
	OEM Air	Fan	Water
Dimensions (L) mm (inches)	571 (22.5)	571 (22.5)	584 (23)
Dimensions (W) mm (inches)	158 (6.2)	196 (7.7)	143 (5.6)
Dimensions (H) mm (inches)	148 (5.8)	150 (5.9)	150 (5.9)
Weight kg (lbs.)	11.6 (25.5)	13.1 (28.9)	11.9 (26.2)

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 from cold start as $\pm(P_{max}-P_{min})/(P_{max}+P_{min})$
 3 - Measured 1/e² diameter at laser output.

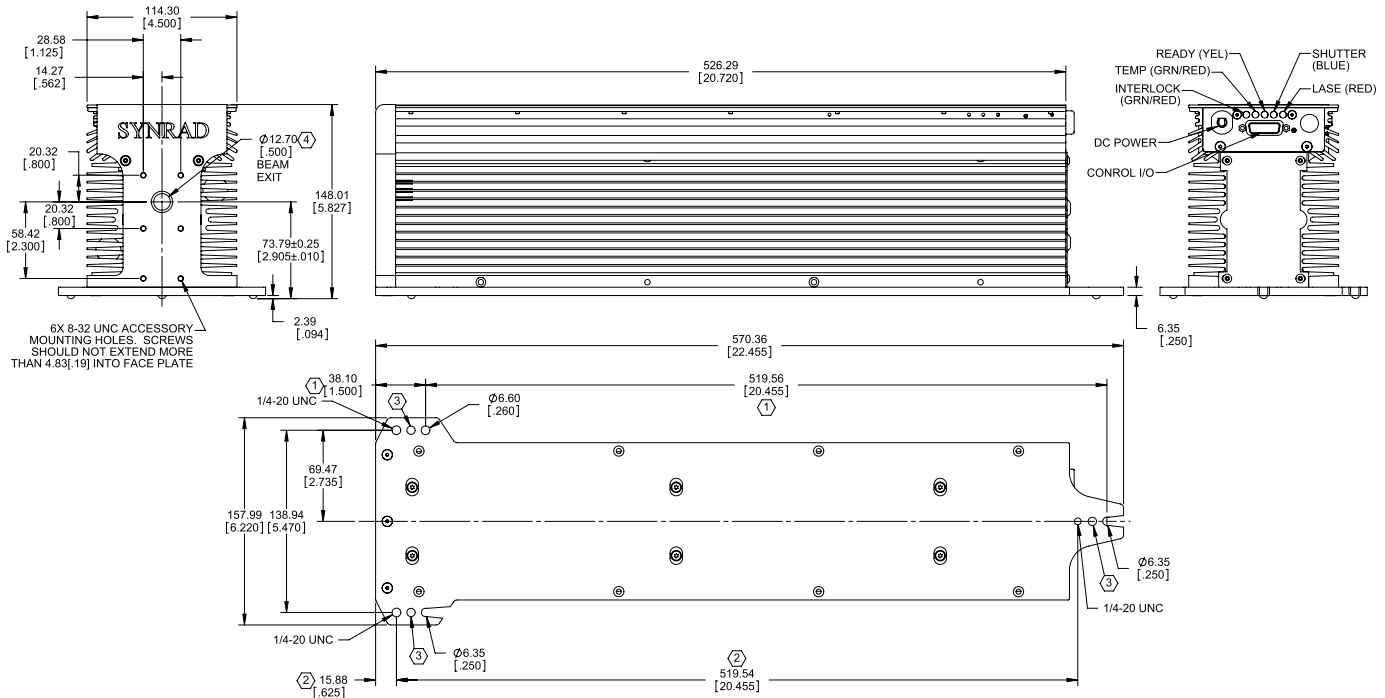


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Technical Illustrations dimension are in mm (inches)

Outline and mounting drawings for fan and water-cooled models are available on the Synrad website at: <https://www.synrad.com/products/lasers/ti-series>.

Air-Cooled



NOTES:

- ① THIS MOUNTING HOLE PATTERN USED WHEN TOP ACCESS FASTENING DESIRED.
- ② THIS MOUNTING HOLE PATTERN USED WHEN BOTTOM ACCESS FASTENING DESIRED.
- ③ HARDENED BALL MOUNTING POINT, 3X (Ø.250 STEEL BALL).
- ④ BEAM PATH MAY NOT BE CENTERED OR PERPENDICULAR TO FACEPLATE APERTURE.

Recommended Applications



General Cutting

80 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

Excellent choice for SLS printing, patented taper technology maximizes optical efficiency and power output.

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