

# ti60 CO<sub>2</sub> Laser

Compact laser with more than 60 Watts of average power for high-speed marking, cutting and 3D printing applications



Industrial CO<sub>2</sub> laser engineered for high performance and power at 9.3 μm, 10.2 μm, and 10.6 μm wavelengths

- Ensure efficient energy delivery and better throughput with fast rise/fall times
- Improve marking, engraving, and cutting throughput with over 60 W average power regardless of wavelength
- Utilize space efficiently with the compact footprint consistent across all of 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 CO<sub>2</sub> wavelengths
- Optimize your application: Available in multiple CO<sub>2</sub> wavelengths, cooling options, and in a high stability package



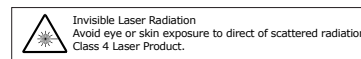
## Maximize Design Flexibility

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 <sup>1</sup>                 | >60 W   |             |             |
| Power Stability (cold start) <sup>2</sup> | ±7%   |             |             |
| Power Stability (typical, after 3 min.)   | ±6%   |             |             |
| Beam Quality (M <sup>2</sup> )            | <1.2  |             |             |
| Beam Diameter <sup>3</sup>                | 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                           | 18.0 A  |             |             |
| Cooling                                   |   |             |             |
| Maximum Heat Load                         | 900 W   |             |             |
| Coolant Temperature                       | <40° C (air), 18 - 22° C (water)                      |             |             |
| Minimum Flow Rate                         | 140 CFM, 2 required (air)<br>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 operating 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/e<sup>2</sup> diameter at laser output.

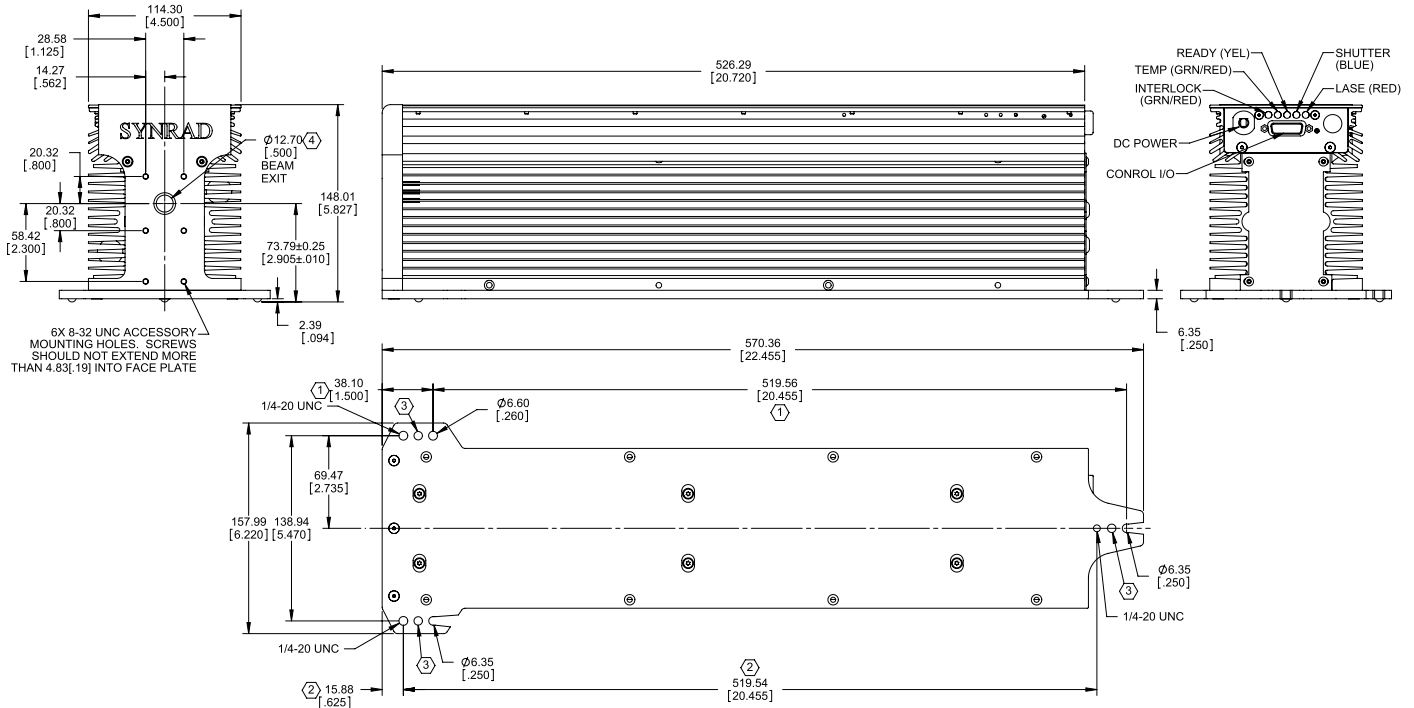


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Technical Illustrations dimension are in mm (inches)

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

60 W of power and fast rise/fall times ensures clean, crisp cutting. Multiple wavelength options enables cutting across a wide range of materials.



### High Speed Coding

Easily applies permanent alpha numeric codes, barcodes, text, and expiration dates to a variety of packaging materials that will not smear or rub off.



### Engraving

Enhance tactile experience or enable quick identification of organic materials by adding distinctive texture, contours, marks, or text.

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