

# ti-series HS – High Stability Water Cooled CO<sub>2</sub> Laser



- Output power > 100W**
- Low cost of ownership**
- Compact design**
- Excellent power stability**
- Easy-to-integrate & upgrade, robust design**
- Synrad performance & reliability**

**Introducing a high-stability version of the ti-series lasers which deliver average output power in the range of 60 to 100W with excellent power stability, further extending the capability of our firestar ti-series product line. It delivers all the performance features you need for high-speed processing in precision applications which demand power stability.**

Synrad is pleased to announce the extension to its highly acclaimed t-series. This water-cooled laser delivers a range of average power from 60 to 100W in a compact footprint making it an ideal laser source for integration in OEM systems. While keeping all the other performance attributes the same as the ti-100W version, it guarantees warm power stability of  $\pm 2\%$ , making this an ideal laser choice in applications which are sensitive to power density fluctuations such as electronics film processing, 3D printing, and denim fabric marking.

## Firestar ti-series HS Core Features:

- Based on ti-series' renowned fast rise/fall time
- Excellent power stability and pulsing characteristics
- High modulation frequency up to 160 kHz
- Integrated 48V RF design
- Most compact laser in its class
- Low-cost and energy efficient
- Built in "tickle" generator
- Built in "Strike Detect" sensing and feedback
- Color-coded LEDs mirror user outputs
- Robust construction
- Easily upgradable and easy integration with common beam exits with the Firestar v and ti series lasers

## Specifications:

	ti100hs	ti80hs	ti60hs
Average Output Power (minimum) <sup>1,2</sup>	100W	80W	60W
Wavelength	10.57 - 10.63 $\mu\text{m}$	10.57 - 10.63 $\mu\text{m}$	10.57 - 10.63 $\mu\text{m}$
Rise Time / Fall Time (typical, tested at 1kHz, 50% Duty Cycle)	< 75 $\mu\text{s}$ / < 75 $\mu\text{s}$	< 75 $\mu\text{s}$ / < 75 $\mu\text{s}$	< 75 $\mu\text{s}$ / < 75 $\mu\text{s}$
Power Stability from Cold Start <sup>2</sup> (typical)	$\pm 4\%$	$\pm 4\%$	$\pm 4\%$
Power Stability after 3 Minutes <sup>2</sup> (guaranteed)	$\pm 2\%$	$\pm 2\%$	$\pm 2\%$
Duty Cycle Range	1% - 100%	1% - 100%	1% - 100%
Beam Waist Diameter (at 1/e <sup>2</sup> ) <sup>2</sup>	2.2mm $\pm 0.3$ mm	2.2mm $\pm 0.3$ mm	2.2mm $\pm 0.3$ mm
Beam Diameter at Faceplate (at 1/e <sup>2</sup> )	2.2mm $\pm$ 0.3mm	2.2mm $\pm$ 0.3mm	2.2mm $\pm$ 0.3mm
Beam Divergence, full angle (at 1/e <sup>2</sup> ) <sup>2</sup>	8.0 $\pm 0.5$ mrad	8.0 $\pm 0.5$ mrad	8.0 $\pm 0.5$ mrad
Mode Quality <sup>2</sup>	M <sup>2</sup> $\leq$ 1.3	M <sup>2</sup> $\leq$ 1.3	M <sup>2</sup> $\leq$ 1.3
Ellipticity <sup>2</sup>	< 1.2	< 1.2	< 1.2
Polarization	Linear (vertical)	Linear (vertical)	Linear (vertical)
Pointing Stability	< $\pm 10\%$ of divergence	< $\pm 10\%$ of divergence	< $\pm 10\%$ of divergence
Cooling	Water	Water	Water
Heat Load (maximum)	1700W	1700W	1700W
Flowrate <sup>3</sup>	1.0-2.0GPM	1.0-2.0GPM	1.0-2.0GPM
Input Voltage/Current (maximum)	48V/35A	48V/35A	48V/35A
Dimensions (inches)	21.4x4.1x5.9	21.4x4.1x5.9	21.4x4.1x5.9
Dimensions (mm)	544x104x150	544x104x150	544x104x150
Weight	42lbs / 19kg	42lbs / 19kg	42lbs / 19kg

Specifications subject to change without notice.

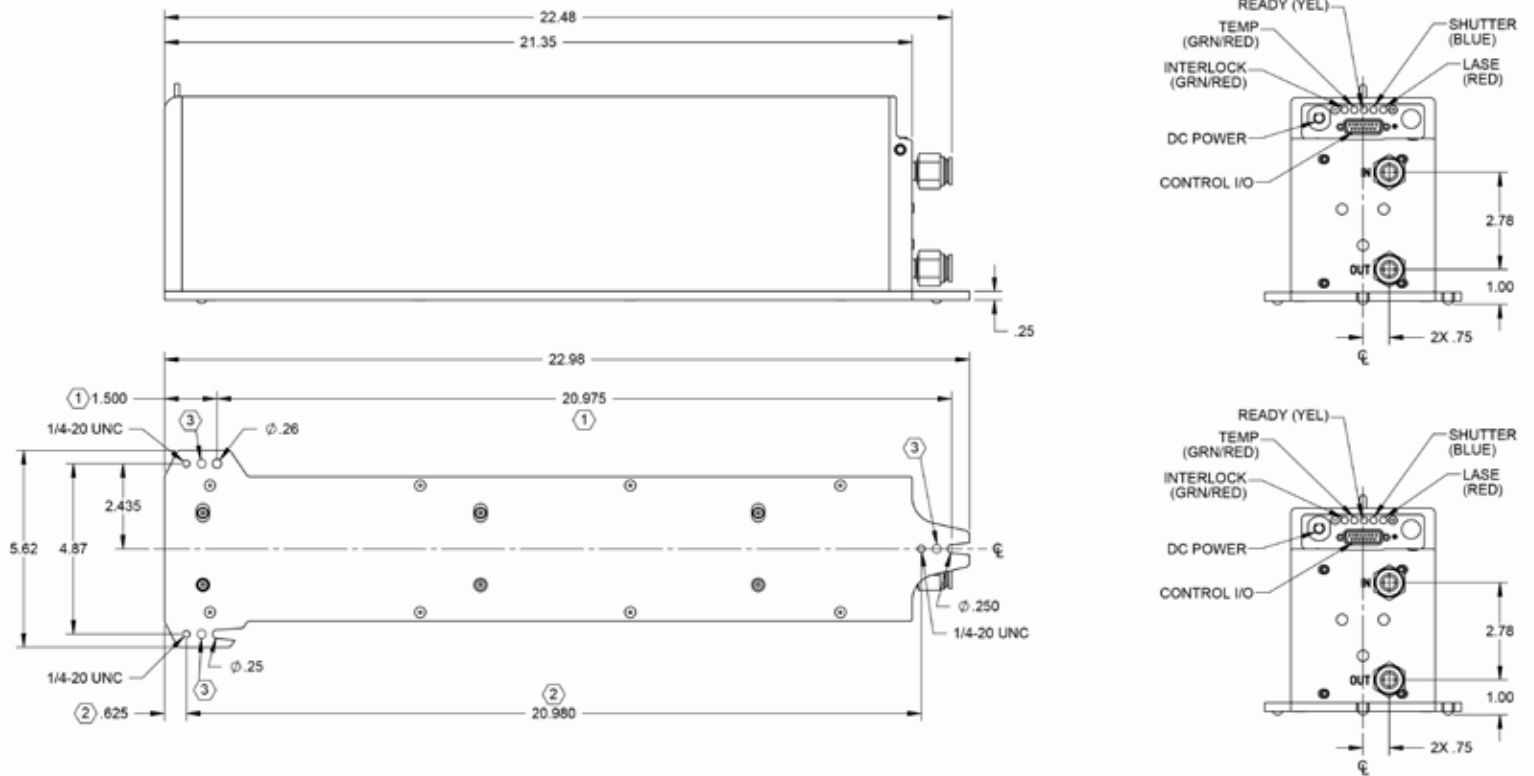
1. Power level guaranteed for 24 months from date of shipment, regardless of hours, provided laser is operated within the recommended coolant flowrate and operating temperature range

2. Measured at 5kHz, 99% duty cycle, 2 GPM and 20° C water temperature

3. At coolant temperatures above 22° C, derate power 0.5 W/°C to 1 W/°C up to a coolant temperature of 28 °C.

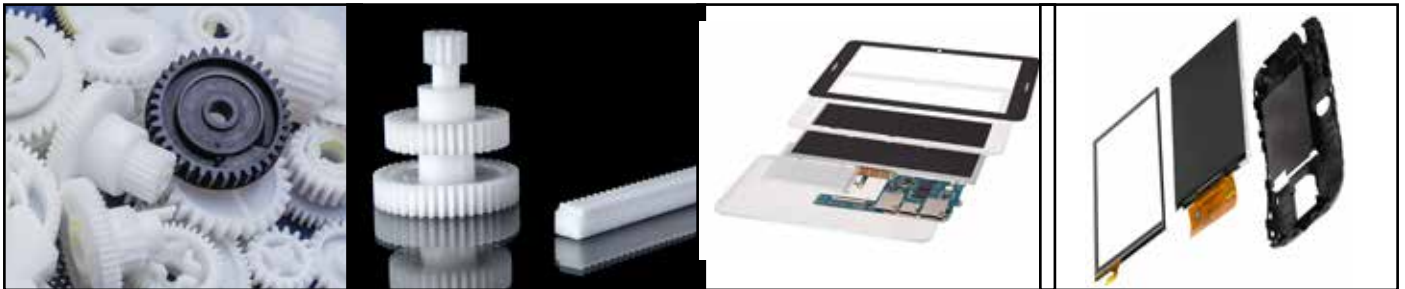
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## Outline and Mounting:



## Typical Applications:

The high stability, average power, fast rise and fall times, makes the ti-series HS the laser of choice for applications sensitive to power fluctuations like electronic films and denim. Use the ti-series HS for 3D printing, cutting film for the electronics industry, the sensitive business of marking denim and the detail needed for marking wood. These are only examples of potential uses for the ti-series HS.



Contact your Synrad Representative to determine the best laser for your application



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

