

# ti100p – Pulse CO<sub>2</sub> Industrial Laser



**300+ W peak pulse power**

**100+ W average power**

**Factory installed beam expander**

**Easy-to-integrate, compact design**

**Synrad performance & reliability**

**Introducing the ti-100p pulse. A universal 100W pulse in multiple wavelengths.**

**Pulse, keeping it in the family.**

Synrad is pleased to announce an addition to its highly acclaimed ti-Series line of CO<sub>2</sub> lasers with the introduction of the *ti100p*. Featuring 300+ Watts of peak pulse power (typical) and over 100 W of average power, the *ti100p* is ideally suited for a wide variety of pulsed applications where faster processing, deeper penetration, and minimal heat affect zone (HAZ) is crucial to your manufacturing success.

Like our other ti-Series lasers, the *ti100p* has a fully integrated RF supply eliminating external RF cabling and bulky external RF supplies. And, with the same familiar LED indicators and I/O interface found on many of Synrad's acclaimed Firestar lasers, installation and operation is quick and easy.

All *ti100p* lasers feature a factory-installed beam expander with your choice of a 3X, 4X, or 5X expansion ratio. In harsh operating environments, this larger output beam reduces the potential for developing hot spots that can damage exposed optical surfaces.

## Firestar ti100p Core Features:

Peak pulse power of > 300W (typical)

Average output power >100W

Peak pulse energy ≤ 130 mJ

Integrated RF drive - no bulky RF power supply or cables!

Ideally suited for clean high-speed, low HAZ processing

## Specifications:

	ti100p (9.3 μm)	ti100p (10.2 μm)	ti100p (10.6 μm)
Peak Power <sup>1</sup>	> 300 W	> 300 W	> 300 W
Average Output Power <sup>2,3</sup>	> 100 W	> 100 W	> 100 W
Peak Pulse Energy	≤ 130 mJ	≤ 130 mJ	≤ 130 mJ
Pulse Length (max)	500 μs	500 μs	500 μs
Rise Time/Fall Time <sup>4</sup>	< 60 μs / < 100 μs	< 60 μs / < 100 μs	< 60 μs / < 100 μs
<b>With 3X BX</b>			
Beam size at output (full width 1/e <sup>2</sup> ) <sup>3</sup>	6.4mm±2mm	6.4mm±2mm	6.4mm±2mm
Beam waist diameter (full width, 1/e <sup>2</sup> ) <sup>3</sup>	6.0mm±2mm	6.0mm±2mm	6.0mm±2mm
Beam Divergence (full width, 1/e <sup>2</sup> ) <sup>3</sup>	2.0mrad±0.6mrad	2.0mrad±0.6mrad	2.0mrad±0.6mrad
<b>With 4X BX</b>			
Beam size at output (full width 1/e <sup>2</sup> ) <sup>3</sup>	8.8mm±1.5mm	8.8mm±1.5mm	8.8mm±1.5mm
Beam waist diameter (full width, 1/e <sup>2</sup> ) <sup>3</sup>	8.0mm±1.5mm	8.0mm±1.5mm	8.0mm±1.5mm
Beam Divergence (full width, 1/e <sup>2</sup> ) <sup>3</sup>	1.6mrad±0.6mrad	1.6mrad±0.6mrad	1.6mrad±0.6mrad
<b>With 5X BX</b>			
Beam size at output (full width 1/e <sup>2</sup> ) <sup>3</sup>	10.0mm±1.5mm	10.0mm±1.5mm	10.0mm±1.5mm
Beam waist diameter (full width, 1/e <sup>2</sup> ) <sup>3</sup>	10.0mm±1.5mm	10.0mm±1.5mm	10.0mm±1.5mm
Beam Divergence (full width, 1/e <sup>2</sup> ) <sup>3</sup>	1.3mrad±0.3mrad	1.3mrad±0.3mrad	1.3mrad±0.3mrad
Mode Quality(M <sup>2</sup> )	< 1.3	< 1.3	< 1.3
Duty Cycle Range	≤ 50%	≤ 50%	≤ 50%
Warm Power Stability (typical, after 2 minutes) <sup>3</sup>	±3%	±3%	±3%
Power Stability (guaranteed from cold start)	±7%	±7%	±7%
Ellipticity	1.2±0.1	1.2±0.1	1.2±0.1
Polarization	Linear (vertical)	Linear (vertical)	Linear (vertical)
Wavelength <sup>5</sup>	9.3μm±0.1μm	10.2μm±0.1μm	10.6μm ±0.1μm typical
Cooling (18°C-22°C) <sup>6</sup>	Water	Water	Water
Heat Load (max)	1700W	1700W	1700W
Flowrate	2GPM <60psi	2GPM <60psi	2GPM <60psi
Input voltage/max current <sup>7</sup>	48±1.0V/35A	48±1.0V/35A	48±1.0V/35A
Dimensions (Inches)	24.9x5.6x5.9	24.9x5.6x5.9	24.9x5.6x5.9
Dimensions (mm)	633x142x150	633x142x150	633x142x150
Weight	26.7lbs/12.1kg	26.7lbs/12.1kg	26.7lbs/12.1kg

Specifications subject to change without notice.

1 Measured @ 10%dc, 1kHz

2 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

3 Measured @ 50%dc, 5kHz

4 Measured @ 5%dc, 100Hz

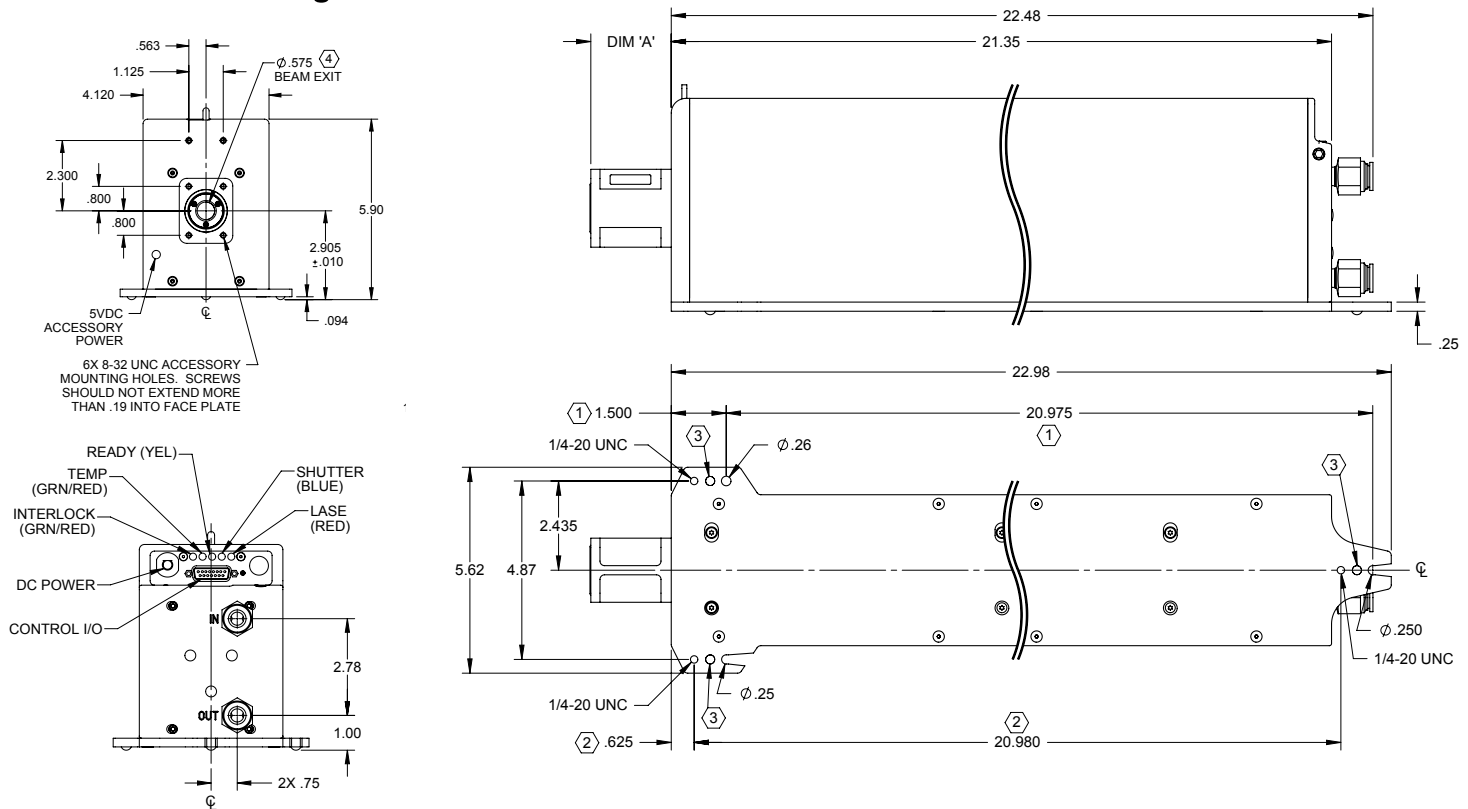
5 Can vary from 10.2μm to 10.7μm, under certain conditions

6 Some performance degradation may occur when operated at above 22°C

7 DC requirement: 100A peak for >50μs, Irms > 60A

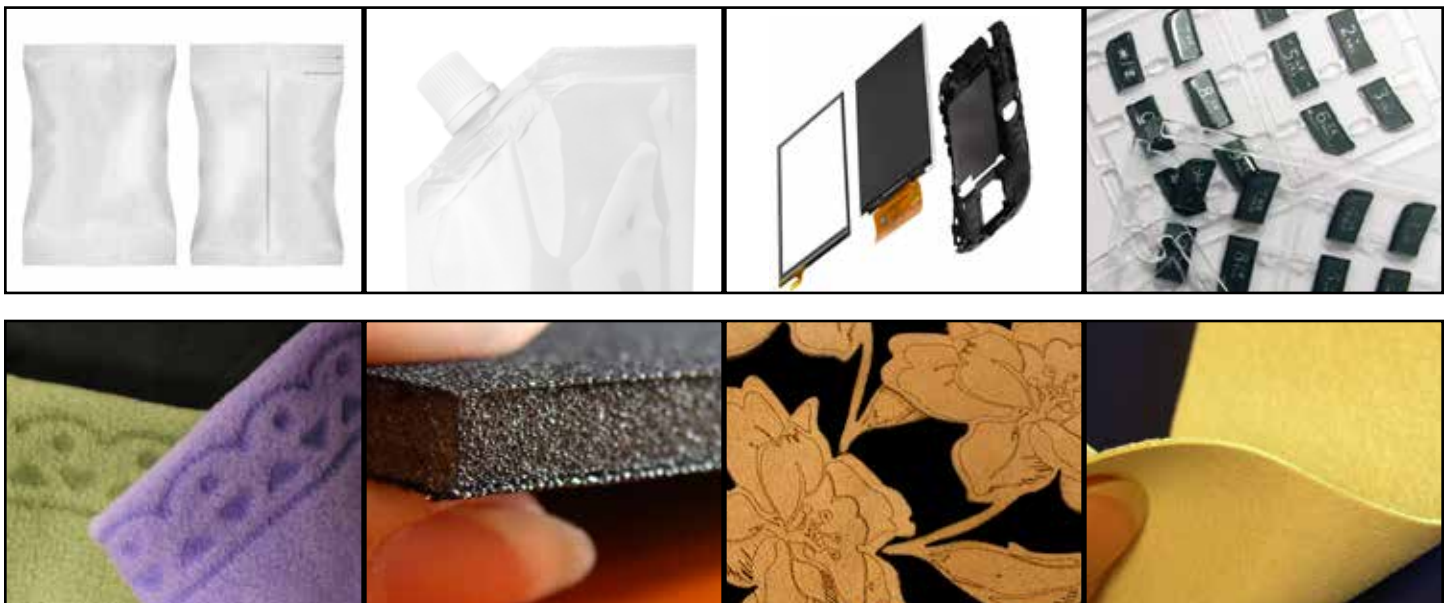
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## Outline and Mounting:



## Typical Applications:

The multiple available wavelengths and pulsed nature of the ti100p allows the flexibility to process various films for the converting and packaging industries, and delivers precision machining of thin plastics and delicate film materials for the ever-changing electronics markets. The textile markets benefit tremendously because 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.



These are only examples of potential uses for the ti100p. Contact your Synrad Representative to determine the best laser for your applications.



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

