

Talisker Ultra 1064-16

Industrial Picosecond Laser

Industrial picosecond lasers are established in many applications where cold photo-ablation material processing leaves a cleanly machined area that eliminates post processing.

The Talisker Ultra 1064-16 is an infra-red only laser system designed for high industrial 'Availability' and low maintenance. The product design features make the laser compatible with a broad range of standard semiconductor processing tools. In particular, the small laser head offers a simplified fit and form for end users. A power supply and chiller are included in the rack-mount system modules.

The product delivers a minimum of 16 Watts of infrared power at pulse rates of up to 200 kHz. The system uses a fiber seed laser to generate picosecond pulses at 1064 nm. The picosecond pulses are amplified using a temperature controlled regenerative amplifier, with the principal benefits of superior beam stability. Both pulse-to-pulse energy stability and beam pointing stability deliver best-in-class performance amongst picosecond laser products.

The amplifier compartment includes two built-in modules that are key to achieving superior materials processing outcomes. A built-in attenuator allows software control of the pulse energy without compromising the beam mode quality; a software controlled acousto-optic modulator acts as a high speed process shutter. Together the user has the ability to program the laser to control the pulse energy, pulse rate and pulse triggering for high throughput materials processing. Connectivity provided on the laser head allows a full set of options for modulation, triggering and synchronization with process stages and scanning equipment. Pulse on demand, burst on demand and pulse trains with intensity modulated profiles are easily configured.

Talisker systems are designed for low cost of ownership mass production. The modular design allows key field replaceable components to be exchanged at the end user site. For total peace of mind, the product line is supported by Coherent world-wide service support.



Superior Reliability & Performance

Talisker Ultra 1064-16 Features:

- **Fiber free-space hybrid technology**
- **Excellent beam quality ($M^2 < 1.3$)**
- **Excellent pulse stability, no first pulse suppression required**
- **Shock, vibration, and thermal cycling tests for every laser**
- **Smart power supply with Ethernet, USB, and RS-232 control**
- **PermAlign™ solder-bonded optics technology**
- **Ultra-long-life AAA™ (Aluminum-free Active Area) laser diode material**

Talisker Ultra 1064-16 Applications:

- **Micromachining**
- **LED Dicing**
- **Patterning Layered Materials**
- **Wafer Scribing**
- **Engraving**

Talisker Ultra 1064-16

Industrial Picosecond Laser

System Specifications¹

Talisker Ultra 1064-16

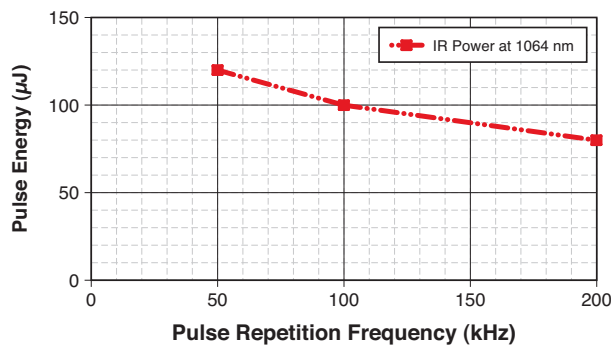
Output Wavelength (nm)	1064
Average Output Power (W)	>16
Pulse Rate Repetition ² (kHz)	Single-shot to 200 with burst control
Pulse Width (ps)	<15
Pulse-to-Pulse Stability (%) (rms 1 σ)	<2
Average Power Stability (%) (over 8 hours)	<2
Polarization Ratio	>100:1 horizontal
Spatial Mode	TEM ₀₀ (M ² <1.3)
1/e ² Beam Diameter (mm)	2.0 \pm 0.5
Beam Circularity (%)	>85
Warm-up Time (typical)	<60 minutes from cold start
Bore-sight Accuracy	
Lateral	<1 mm from window center
Angular	\pm 5 milli-radians
Pointing Stability	
Angular ³ (typical)	<10 micro-radians per degree centigrade
Single-phase Operating Voltage (VAC)	100 to 240 (auto ranging)
Laser Power Consumption	50 to 60 Hz (auto ranging) 1.3 kW maximum
Cooling Requirements	
Laser Head	Closed-loop water recirculator (water/air or water/water)
Power Supply	Air-cooled
Ambient Temperature Range (°C)	
Operating	15 to 30 (\pm 1)
Non-operating	-20 to 50
Relative Humidity (%)	10 to 80 (non-condensing)
Umbilical Length	3m (9.8 ft.)
Weight	
Laser Head	68 kg (149.9 lbs.)
Power Supply	30 kg (66.1 lbs.)
Chiller, Water-cooled (dry weight)	47 kg (103.6 lbs.)

¹ All specifications at the stated pulse repetition rate.

² Using integrated AOM smart pulse control.

³ Validated using a controlled measurement method.

Pulse Energies Available with Talisker Ultra 1064-16



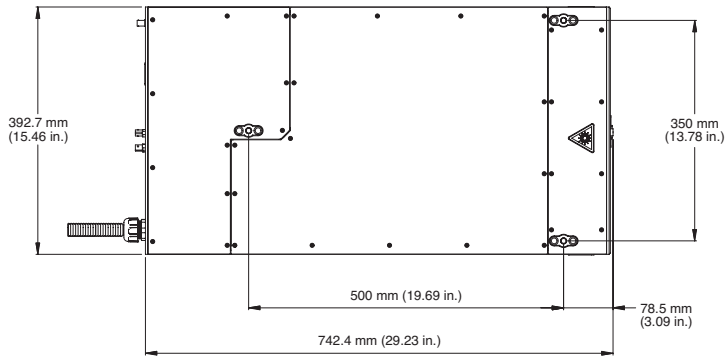
Talisker Ultra 1064-16

Industrial Picosecond Laser

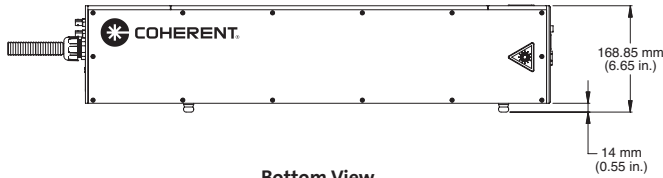
Mechanical Specifications

Laser Head

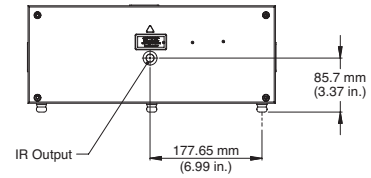
Top View



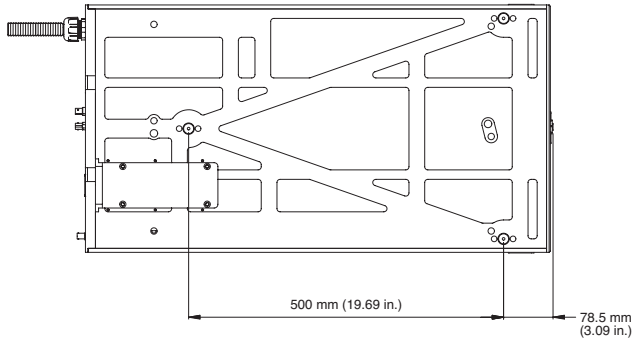
Side View



Front View



Bottom View



COHERENT

www.Coherent.com

Coherent, Inc.,

5100 Patrick Henry Drive
 Santa Clara, CA 95054
 phone (800) 527-3786
 (408) 764-4983
 fax (408) 764-4646
 e-mail tech.sales@Coherent.com

Benelux +31 (30) 280 6060
 China +86 (10) 8215 3600
 France +33 (0)1 8038 1000
 Germany/Austria/
 Switzerland +49 (6071) 968 333
 Italy +39 (02) 31 03 951
 Japan +81 (3) 5635 8700
 Korea +82 (2) 460 7900
 Taiwan +886 (3) 505 2900
 UK/Ireland +44 (1353) 658 833

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Talisker Ultra lasers. For full details of this warranty coverage, please refer to the Service section at www.Coherent.com or contact your local Sales or Service Representative.

