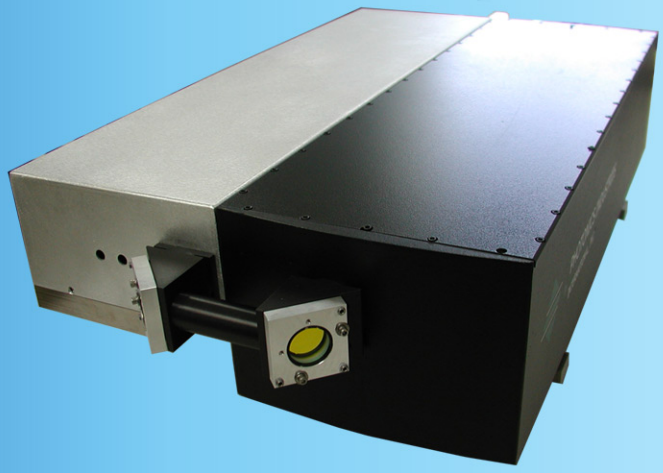
TU Series

Diode Pumped Solid-State Lasers
Tunable ns Ti: Sapphire



Features

- ns Pulse Width
- High Repetition Rate: single shot to 10kHz
- TEM_{00} Mode Beam Profile
- Narrow Bandwidth 1 to 3 GHz
- mJ level Energy/pulse
- Broad Tuning from 700 to 960nm
- Harmonic from 193 to 480nm
- External TTL Triggering
- Computer wavelength scanning (100 MHz/step)
- Multi-pass Amplifier to achieve ~ Watts level UV Output
- Assembled in a clean room environment
- RS232 Computer Control

Applications

- OH Radical Concentration Measurement
- CARS
- LIDAR
- Laser Induced Flourescence
- Mass Spectrometry
- MALDI
- Multi-Photon Spectroscopy
- Raman Spectroscopy
- Non-Contact Inspection
- Time Resolved Spectroscopy

Photonics Industries
International, Inc.

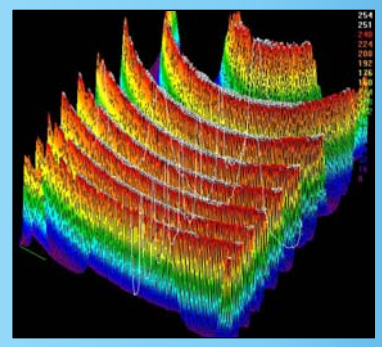
The Pioneer of Intra-Cavity Solid-State Harmonic Lasers

Photonics Industries' patented TU Series of Ti:Sapphire lasers are tunable over a wide range of wavelengths and operate at high repetition rates while providing mJ of energy with a very narrow line width. The TU Series combines our field proven diode pumped Nd:YAG or Nd:YLF lasers with one Ti:Sapphire oscillator to provide a reliable and efficient tunable laser in a compact package.

By minimizing dispersive optical components in the laser cavity, our TU Series lasers provides superior wavelength stability (typically <0.04 cm-1 over eight hours). The fundamental can be tuned from under 700 nm to over 960 nm. With sum and/or harmonic generations, the tuning range can be extended from 480 nm down to 193 nm.

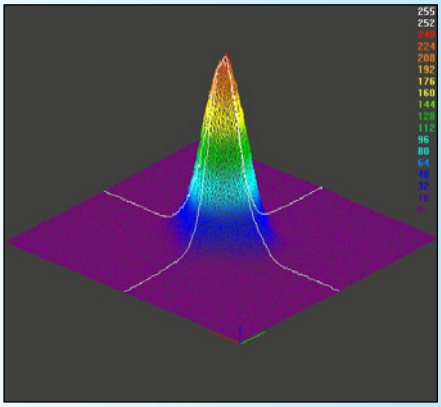
Computer wavelength scanning is available not just for the fundamental wavelength tuning (step size: < 100 MHz), but also for the 2nd, 3rd and/or 4th harmonic output by utilizing Auto-tracking technology. The Auto-tracking feature allows automatic nonlinear harmonic phase matching optimization while the fundamental wavelength is scanning.

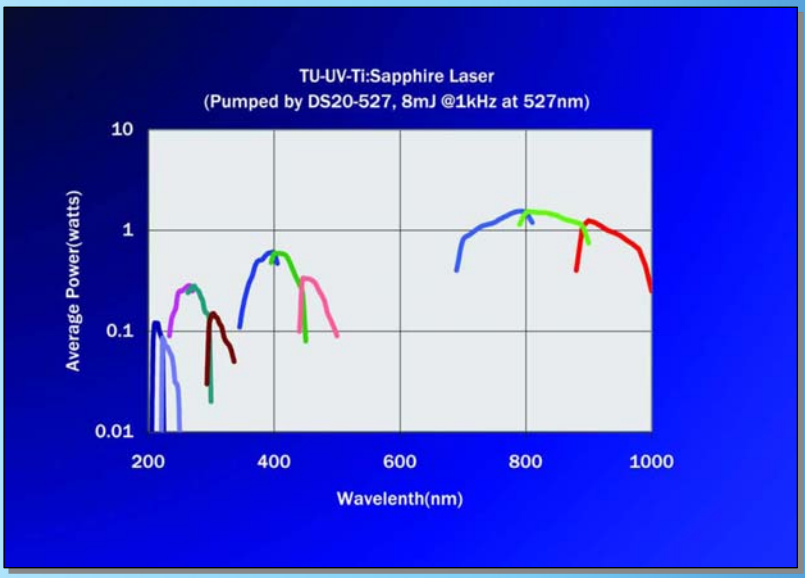
There are two versions of the TU Series: The TU-L addresses high pulse energy at relatively low repetition rates (single shot to 4 kHz); the other TU-H is for high repetition rate applications (single shot to > 10 kHz).



For high power applications, a multipass amplifier can be added to the oscillator to produce high power IR or UV (eg. >1W UV@248 nm has been produced). Here the TU Series of lasers have been used in photolithography to provide high average power, narrow line width and short wavelength required. The high power and good temporal and spatial characteristics also make out TU Series or Ti:Sapphire lasers in ideal choice for holographic applications.

Photonics Industries' TU Series of broadly tunable, high rate narrow line width Ti:Sapphire lasers provide a superior alternative to dye lasers and low repetition rate OPO's. These lasers have been used in the biological sciences to excite fluorescence from a variety of probe molecules. In Raman spectroscopy the Ti:Sapphire's broad tunability, high conversion efficiency has made this laser a popular choice. In measurements of the time constant decay of a fluorescent signal using Time-resolved Fluorescence the Ti:Sapphire laser has proven to be a valuable tool. It has been a top choice for OH radical concentration measurement in the atmosphere.





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Ti:Sapphire Systems

	Tuning Range	TU-L (Avg. Power)†	TU-H (Avg. Power)†
Fundamental	700-970 nm	>1 Watt	>1 Watt
2nd Harmonic	350-480 nm	>400 mWatt	>200 mWatt
3nd Harmonic	233-323 nm	>150 mWatt	>100 mWatt
4nd Harmonic	206-243 nm	>100 mWatt	>50 mWatt
Frequency Mixing	193-206 nm	3-50 mWatt	1-30 mWatt

† The rated average power is for peak tuning. Please see tuning curve for more detail.

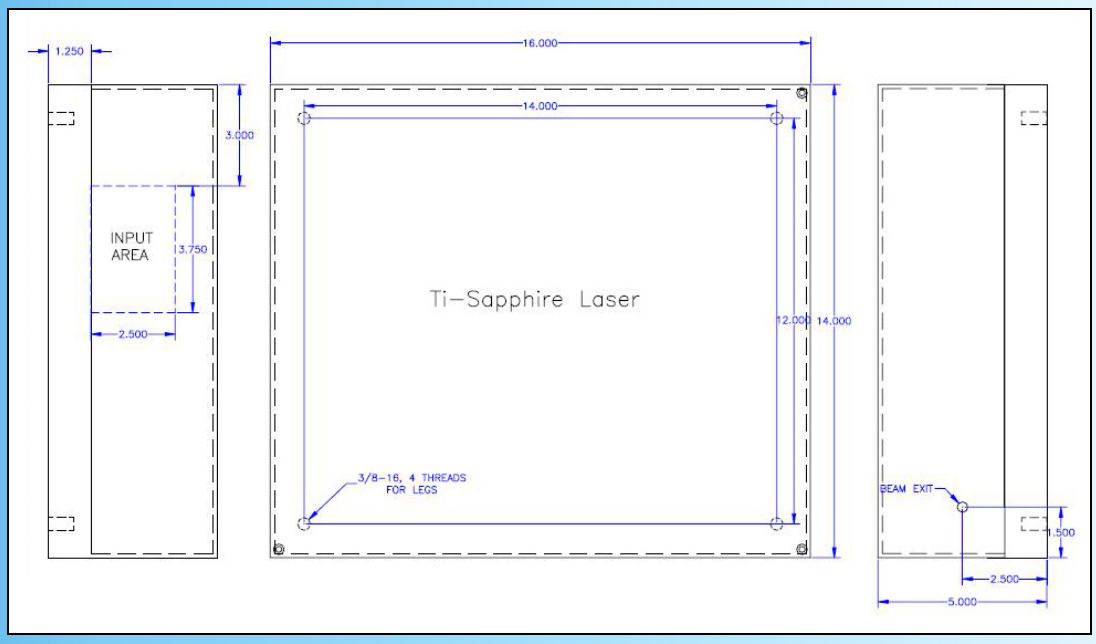
	TU-L	TU-H
Typical Pulse Widths	10-35 ns	30-50 ns
Spatial Mode Profile	TEM_{00}	TEM_{00}
Energy Instability (P to P)	2% rms	2% rms
Line Width (@ 700-970 nm) *	1-3 GHz	1-3 GHz
Repetition Rate	Single shot to 4 kHz	Single shot to 10 kHz

* ±1°C Temperature Stability

Common Specifications

	Width	Length	Height	Weight
Laser Head (DC Pumped)	356 mm	407 mm	127 mm	23 kg
Laser Head (DS/DM Pumped)	483 mm	600 mm	165 mm	---
Laser Controller	470 mm	483 mm	133 mm	17 kg
Solid State Chiller	457 mm	483 mm	381 mm	37 kg
Electrical Requirement	110 VAC 20 Amps or 220 VAC 10 Amps @ 50/60 Hz			
Ambient Temperature	15 to 30 °C (59 to 86 °F) Operating Range			
Umbilical Length	3 meters (10 feet)			

DC pumped Ti:Sapphire



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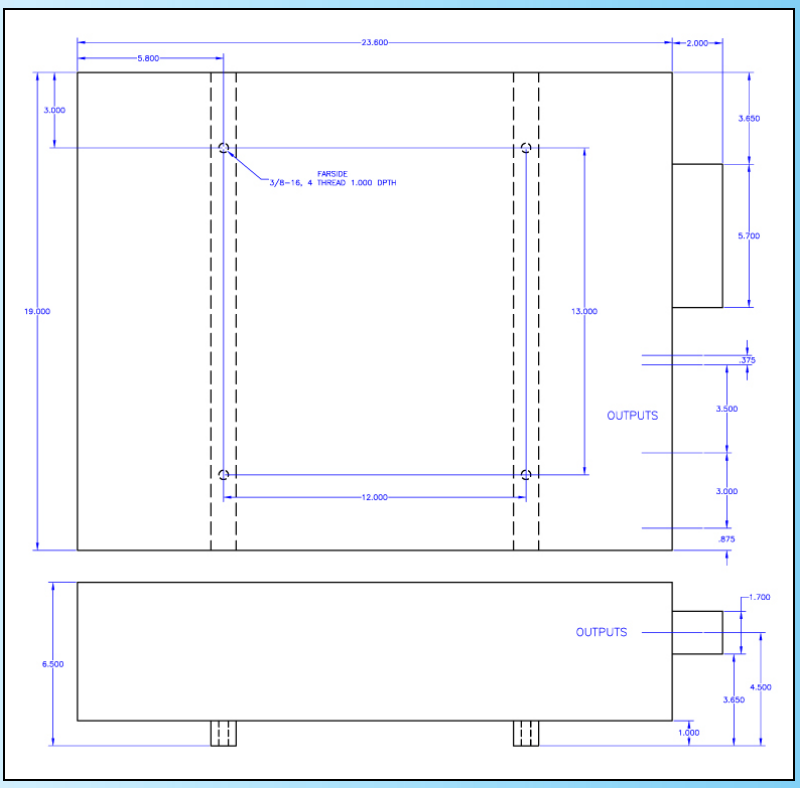

Options

- Computer controlled wavelengh scanning, step size 100 MHz,of the fundamental wavelength
- Multipass amplifier to produce high pulse energy output

Customized Products

In addition to our standard laser specifications, customized versions can be provided to meet our costumer's specific requirements. For wavelengths not mentioned in these specifications please contact Photonics Industries.

Due to Photonics Industries' commitment to continuous product improvement, Specifications are subject to change without notice.

Photonics Industries International, Inc.

390 Central Avenue
Bohemia, NY 11716
Phone: (631) 218-2240
Fax: (631) 218-2275
Email: info@photonix.com
Web: www.photonix.com

Photonics Industries conforms to provisions of US 21 CFR 1040.10 & 1040.11 and is made under one or more US patents listed below: 7,346,092: 7,082,149: 7.079,557: 6,999,483: 6,980,574: 6,961,355: 6,842,293: 6,762,405: 6,690,692: 6,587,487: 6,584,487: 6,366,596: 6,327,281: 6,356,578: 6,246,707: 6,229,839: 6,108,356: 6,061,370: 6,028,620: 5,936,938: 5,898,717 and Pending Patents