1645 nm Q-switched Diode-Pumped Solid State Laser

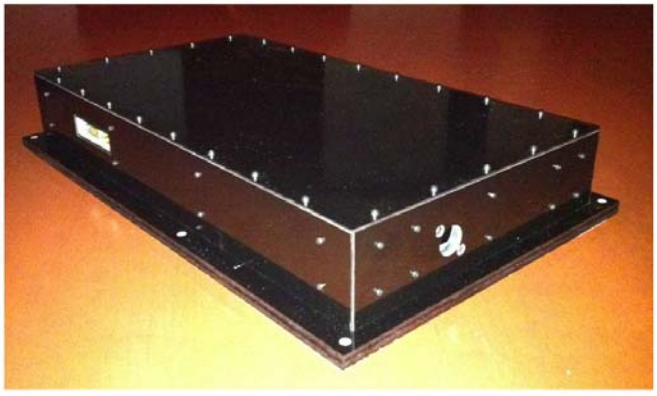
The Princeton Lightwave Q-switched diode-pumped solid-state laser (Q-DPSSL) provides high-energy mJ-class optical pulses at an eye-safe short-wave infrared wavelength of 1645 nm. This laser employs resonant pumping of an Er:YAG gain medium using technology pioneered by Princeton Lightwave. Resonant pumping is achieved by pumping at a wavelength close to the output wavelength of the laser, providing a very small "quantum defect". This approach to solid state laser design minimizes heating of the gain medium and results in superior beam quality, higher peak power levels, higher electro-optical efficiency, and enhanced reliability. Pumping is established using an integrated high-power, single-emitter pump module assembly based on Princeton Lightwave's industry-leading InGaAs/InP diode laser technology. This Q-DPSSL architecture affords significant advantages in terms of thermal management and laser reliability.

This product is available in two versions:

The ***PML-664HE*** provides high energy at low repetition rate (~50 Hz)
The ***PML-664HR*** provides high power at high repetition rate (~1000 Hz)

Features

- **"Eye-safe" operating wavelength at 1645 nm**
- **Pulse repetition frequencies ranging from CW to 2000 Hz**
- **mJ-class output pulse energies**
- **Low dissipation resonant pumping**
- **High peak power**
- **High electro-optical efficiency**
- **Superior beam quality**
- **Excellent atmospheric transmittance**
- **Enhanced reliability**



Applications

- **Range-finders**
- **LIDAR/LADAR systems**
- **Materials processing**
- **Scientific equipment**
- **Medical/cosmetic treatments**

Laser interfaces

- Pump laser driver electronics: power supplied to chassis input connector
- Acousto-optic modulator driver electronics: pulse input via chassis SMA connector
- Thermal management: input signals at chassis input connector

Options: PLI can provide electronics for all laser interfaces for a complete turn-key system

Specifications subject to change without notice

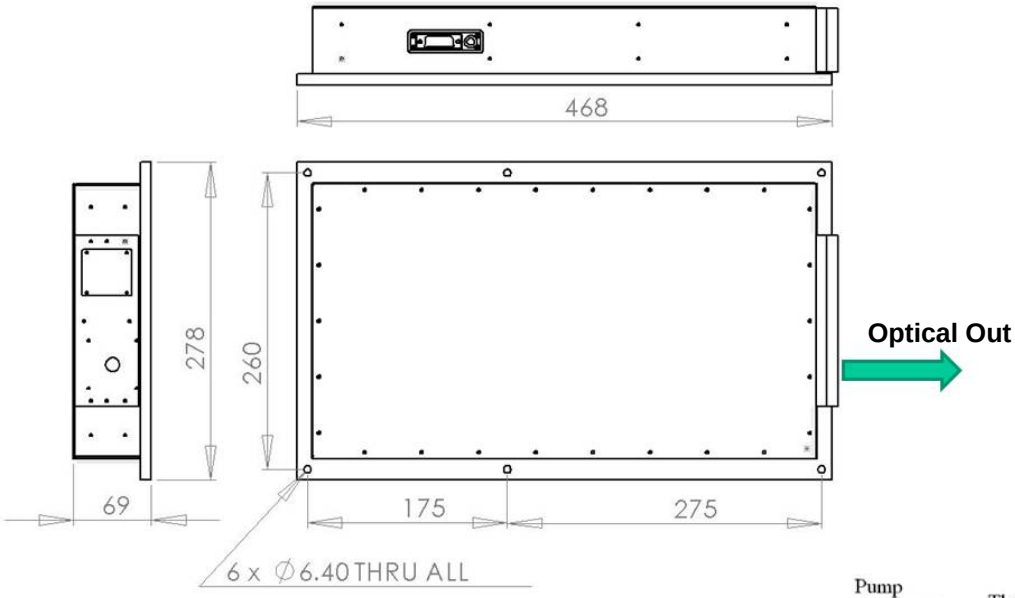
Princeton Lightwave high power laser products and associated technical data may be subject to the controls of the US Export Administration Regulations (EAR).

Part No. PML-664HE: 1645 nm High Energy Q-switched DPSSL

SPECIFICATIONS

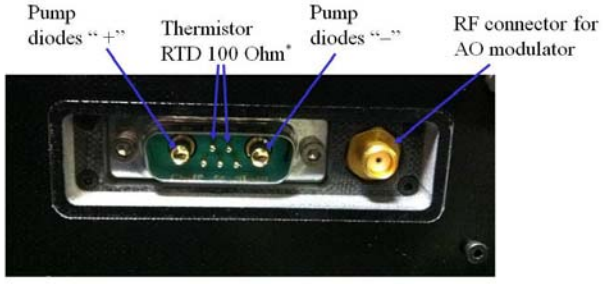
Operating Conditions: 15°C operating temperature, 50 Hz repetition rate, QCW pumping (unless specified otherwise)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Wavelength	λ			1645		nm
Average Power	P_{avg}			0.45		W
Pulse Repetition Rate	f		CW	50	150	Hz
Pulse Duration	T	at E_{min}		40	50	ns
Pulse Energy	E		8			mJ
Beam Parameter		at E_{min}		0.7	1	mm•mrad
Circularity		at E_{min}	90	95		%
Spatial Mode		at E_{min}		TEM_{00}		
Output Power Stability		at E_{min}		±2		%
Operating Temperature	T_{op}	at baseplate bottom	15	20	25	ºC
Dissipated Heat Load		at E_{min},at baseplate bottom		40	50	W
Warm Up-Time				5	15	min



(All dimensions in mm)

Electrical connections



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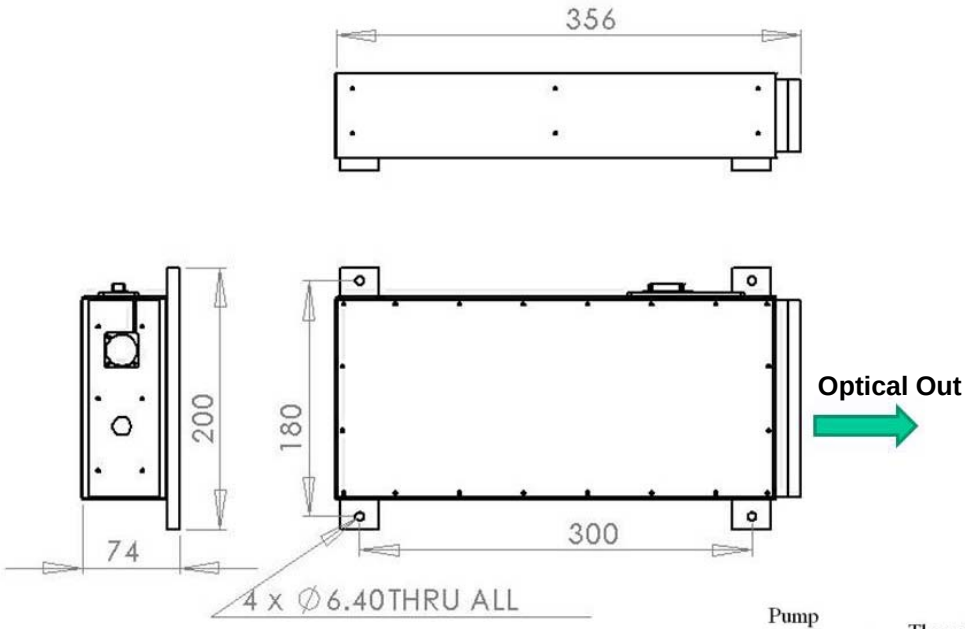
Cranbury, NJ 08540
Tel: 609-495-2600
http://www.princetonlightwave.com

Part No. PML-664HR: 1645 nm High Repetition Rate Q-switched DPSSL

SPECIFICATIONS

Operating Conditions: 15°C operating temperature, 1000 Hz repetition rate, CW pumping (unless specified otherwise)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Wavelength	λ			1645		nm
Average Power	Pavg			3		W
Pulse Repetition Rate	f		500	1000	2000	Hz
Pulse Duration	T	at E_{min}		70	80	ns
Pulse Energy	E		3			mJ
Beam Parameter		at E_{min}		0.7	1	mm•mrad
Circularity		at E_{min}	90	95		%
Spatial Mode		at E_{min}		TEM_{00}		
Output Power Stability		at E_{min}		±2		%
Operating Temperature	T_{op}	at baseplate bottom	15	20	25	ºC
Head Load		at E_{min}, at baseplate bottom		160	180	W
Warm Up-Time				5	15	min



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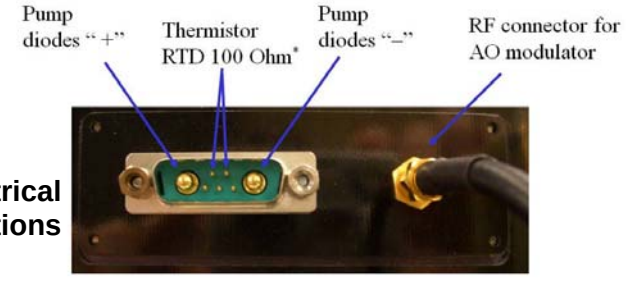

Electrical connections

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