

# PhotoSonus X

NEW



PhotoSonus X is a perfect solution for photoacoustic imaging. It has high output energy of more than 50 mJ at the peak in a broad wavelength tuning range from 650 to 2600 nm. It operates at 100 Hz pulse repetition rate. This set of parameters is perfect choice for gaining good photoacoustic signal strength and ensuring high data collection rate. Diode pumped laser technology

and well-engineered system design ensures reliability and low-cost system maintenance. System comes with one-year warranty.

PhotoSonus X has fiber bundle connector with safety interlock. Bundle connector adapter and beam size are adapted to fiber bundle input ferule dimensions.

PhotoSonus X can be certified for clinical photoacoustic applications.

## High Output Power DPSS Tunable Laser for Photoacoustic Imaging

### FEATURES

- ▶ Hands-free wavelength tuning from 670 to 1063 nm and 1064 – 2600 nm
- ▶ High, up to 50 mJ pulse energy from OPO
- ▶ 100 Hz pulse repetition rate
- ▶ Low-cost maintenance
- ▶ Certification ready
- ▶ Integrated DPSS pump laser and OPO into a single housing
- ▶ Fiber bundle holder with safety interlock

### OPTIONS

- ▶ Fast wavelength tuning
- ▶ Lower energy cost-effective version. Contact Ekspla for details

### PERFORMANCE

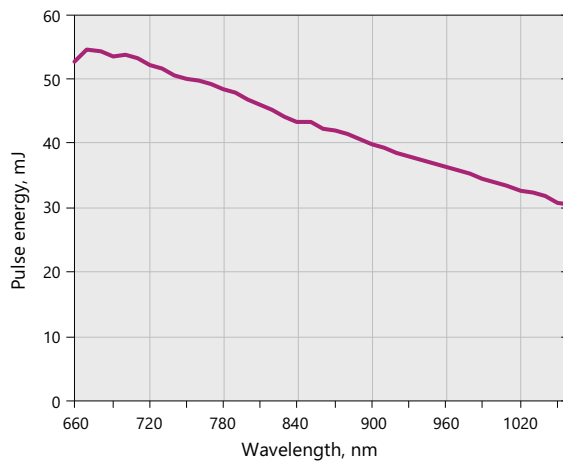


Fig 1. Typical output pulse energy of PhotoSonus X laser

## SPECIFICATIONS

Model	PhotoSonus X
<b>OPO</b>	
Wavelength range	
Signal	670–1063 nm
Idler	1064–2600 nm
Pulse repetition rate <sup>1)</sup>	100 Hz
Pulse duration <sup>2)</sup>	2–5 ns
Linewidth	<10 cm <sup>-1</sup>
Typical beam diameter <sup>3)</sup>	4 mm <sup>4)</sup>
<b>PHYSICAL CHARACTERISTICS</b>	
Unit size (W × L × H)	400 × 551 × 162 mm
Power supply size (W × L × H)	2 units, 471 × 391 × 147 mm each
Umbilical length	2.5 m
<b>OPERATING REQUIREMENTS</b>	
Cooling	stand alone chiller
Room temperature	18–27 °C
Relative humidity	20–80 % (non-condensing)
Power requirements	90–240 V AC, single phase 50/60 Hz
Power consumption	< 2 kW

- <sup>1)</sup> Inquire for other pulse repetition rates.
- <sup>2)</sup> FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.
- <sup>3)</sup> Beam diameter is measured at 800 nm at the FWHM level and can vary depending on the pump pulse energy.
- <sup>4)</sup> Adjustable with internal telescope.



## OUTLINE DRAWINGS

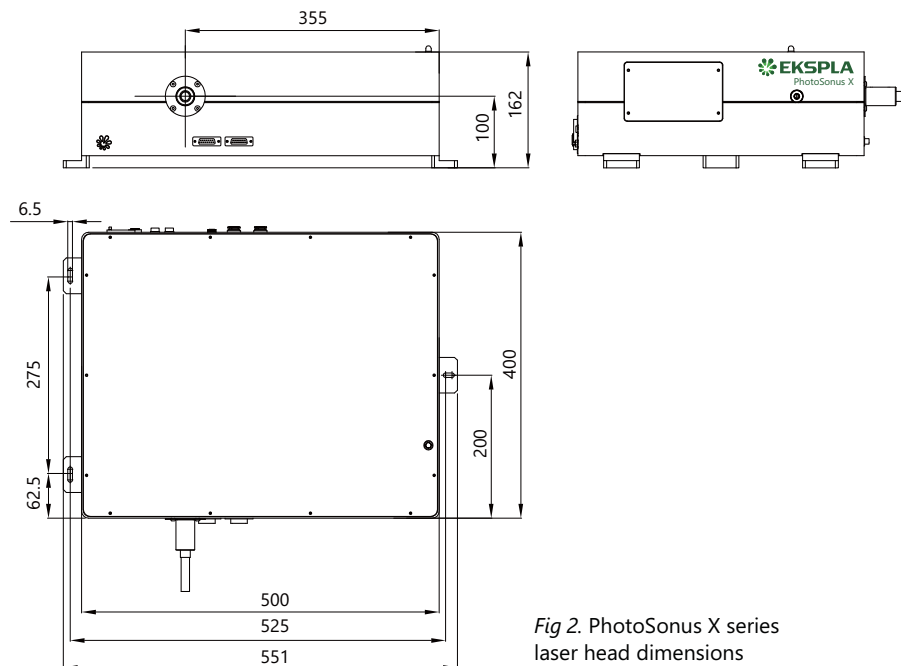


Fig 2. PhotoSonus X series laser head dimensions

**Note:** Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer that 1 hour then laser (system) needs warm up for a few hours before switching on.

# PhotoSonus



Following the demand of high output energies in the photoacoustic market for imaging larger volumes of tissue, PhotoSonus, a updated high energy tunable laser source for photo-acoustic imaging is introduced. Time-tested Ekspla nanosecond pump laser, parametric oscillator, power supply and cooling unit are integrated in a single robust housing to provide mobility, ease of use and low maintenance cost.

Highly flexible PhotoSonus platform makes it easy to be integrated and used in a photoacoustic imaging system: it is fully motorized and computer controlled, have user

trigger outputs /inputs and special functions as fast tuning between OPO wavelengths. Parametric oscillator generates output energies up to 180 mJ at peak of wide wavelength tuning range (650 – 1064 nm). Customizable and interlocked fiber bundle connector ensures safety and ability to fit various size fiber bundles.

For customers who demand even higher output energy, we are introducing PhotoSonus with **High Energy option**. 250 mJ output energy is achieved at the peak from OPO at 10 Hz. For more details inquire separately.

**High Energy,  
Mobile and Tunable  
Wavelength  
Laser Source for  
Photoacoustic  
Imaging**

## FEATURES

- ▶ *High 180 mJ output energy*
- ▶ *Wide tuning range  
from 650 to 1064 nm*
- ▶ *Higher 250 mJ output energy  
is optional*
- ▶ *10 Hz or 20 Hz pulse  
repetition rate*
- ▶ *Integrated pump laser, OPO  
and PSU in single portable unit*
- ▶ *One year warranty*
- ▶ *Low maintenance cost*
- ▶ *Fiber bundle connectors  
with safety interlock*

## OPTIONS

- ▶ *Full range fast wavelength tuning*
- ▶ ***High energy (250 mJ)** – inquire  
separately*
- ▶ *Rapid switching between OPO and  
pump wavelength (1064 nm)*
- ▶ *Access to pump laser wavelengths  
(1064 / 532 nm)*
- ▶ *Idler output 1064 – 2300 nm*
- ▶ *Motorized attenuator*
- ▶ *Energy meter*

SPECIFICATIONS <sup>1)</sup>

Parameter	Value
Wavelength range	650 – 1064 nm
Pulse repetition rate	10 or 20 Hz
Pulse duration	3 – 5 ns (FWHM)
Pulse energy stability	< 2 % StDev
Linewidth <sup>2)</sup>	< 10 cm <sup>-1</sup>

<sup>1)</sup> Due to continuous improvement, all specifications are subject to change without notice.

Find latest updates and specifications at [ekspla.com](http://ekspla.com)

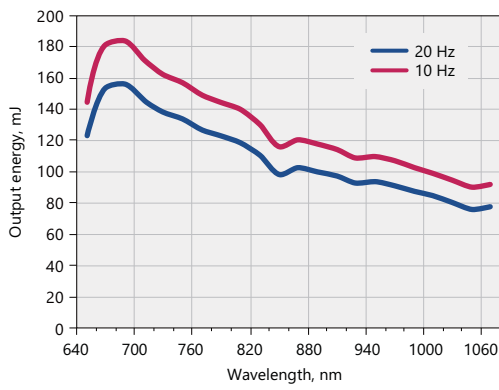
<sup>2)</sup> In the range 660 – 1064 nm.

POWER SUPPLY

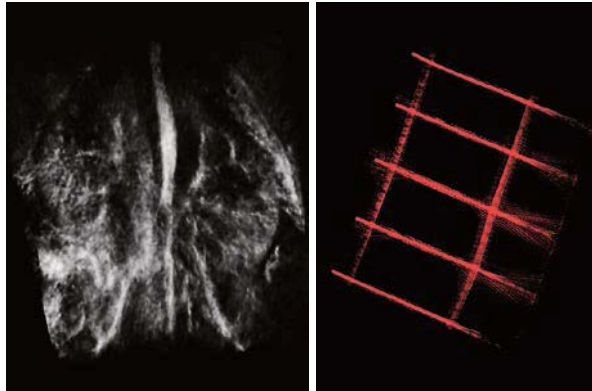
- ▶ Power supply unit integrated
- ▶ Universal line voltage
- ▶ Closed-loop air-water cooled



PERFORMANCE

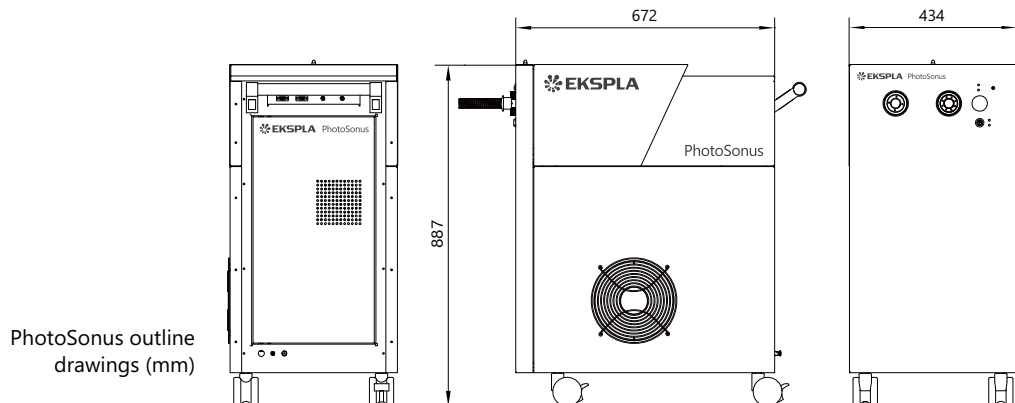


SAMPLE PHOTOACOUSTIC IMAGES



Courtesy of PhotoSound Technologies, Inc.

DRAWINGS



PhotoSonus outline drawings (mm)