PhotoSonus

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

FEATURES

- *High **up to 250 mJ** output energy*
- *Wide tuning range **from 660 to 1064 nm** and **from 1065 to 2300 nm***
- ***10 Hz** or **20 Hz** pulse repetition rate*
- *Integrated pump laser, OPO and PSU in single mobile unit*
- *One year warranty*
- *Low maintenance cost*
- *Fiber bundle connectors with safety interlock*
- *Fast Wavelength Switching within entire range between two consecutive pulses (optional)*
- *Electromechanical output shutter with laser self-test capability (optional)*
- *Integrated energy meter (optional)*
- *Motorized attenuator (optional)*
- *Access to pump laser wavelengths 1064/532 nm (optional)*
- *Signal and Idler through the same output (optional)*

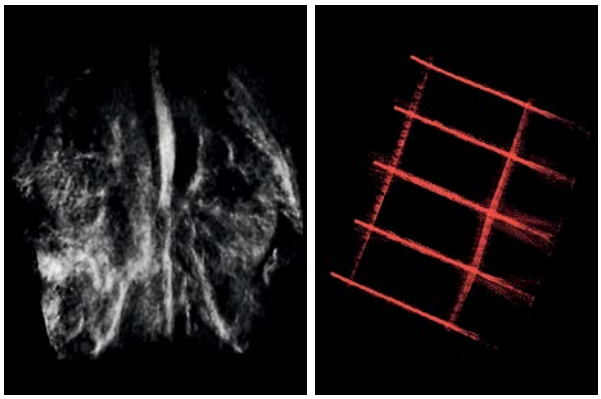
Following the demand for high output energies in the photoacoustic market for imaging larger volumes of tissue, PhotoSonus, an updated high energy tunable laser source for photo-acoustic imaging, was introduced. Time-tested Ekspla nanosecond pump laser, parametric oscillator, power supply and cooling unit are integrated in a single robust housing to provide mobility, ease of use and low maintenance cost. The highly flexible PhotoSonus platform makes it easily integrated and used in a photoacoustic imaging system. It is fully motorized and computer controlled, with user trigger outputs and inputs and special options such as motorized switching between OPO Signal and Idler, motorized attenuator, internal energy meter and electromechanical output shutter.

Recently, a fast wavelength switching option was introduced that enables each laser pulse to have a different wavelength within the entire signal or idler range and at any sequence. This new feature, combining high pulse energy (up to 180 mJ) and wide wavelength tuning range (660 – 2300 nm) makes PhotoSonus the irreplaceable imaging source for any photo acoustic system.

For even higher sample imaging depth and resolution a PhotoSonus+, with up to 250 mJ maximum pulse energy, was introduced.

For convenience, the outputs of PhotoSonus and PhotoSonus+ lasers can be coupled with almost any type of fiber bundle.

SAMPLE PHOTOACOUSTIC IMAGES



Courtesy of PhotoSound Technologies, Inc.

SPECIFICATIONS [1]

Model	PhotoSonus	PhotoSonus+
OPO		
Wavelength range		
Signal	660 – 1064 nm	
Idler (optional)	1065 – 2300 nm	
OPO output MAX pulse energy [2]	> 180 mJ at 10 Hz; or > 160 mJ at 20 Hz	> 250 mJ at 10 Hz
Scanning step:		
Signal (660 – 1064 nm)	0.1 nm	
Idler (1065 – 2300 nm)	1 nm	
Pulse duration [3]	3 – 5 ns	
Signal linewidth	< 10 cm^{-1}	< 20 cm^{-1}
Typical signal beam diameter ($1/e^2$) [4]	7 ± 2 mm	9 ± 2 mm
PHYSICAL CHARACTERISTICS		
Unit size (W × L × H mm)	434 × 672 × 887 mm	
OPERATING REQUIREMENTS		
Room temperature	18 – 27 °C	
Relative humidity	20 – 80 % (non-condensing)	
Power requirements [5]	208 or 240 VAC, single phase 50/60 Hz	
Power consumption	< 1.0 kVA (10 Hz), < 1.5 kVA (20 Hz)	< 1.5 kVA (10 Hz)

1) Due to continuous improvement, all specifications are subject to change without notice. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise all specifications are measured at 700 nm.

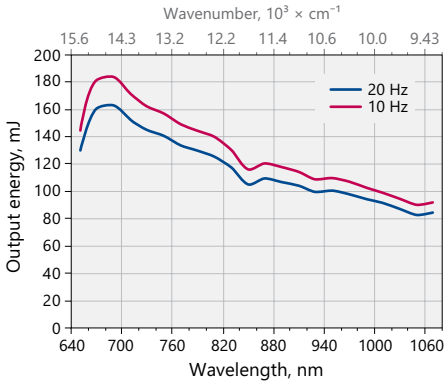
2) Free space measurement at 700 nm. See tuning curves for typical outputs at other wavelengths.

3) FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

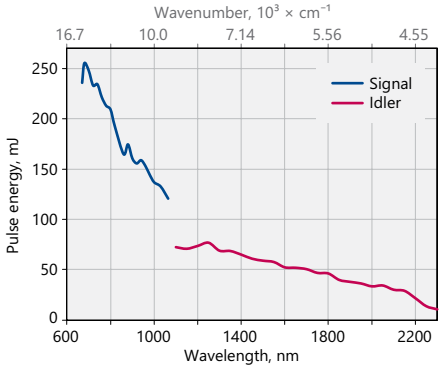
4) Measured at the free space output at 700 nm. Can be adjusted as per request.

5) Mains voltage should be specified when ordering.

PERFORMANCE



Typical PhotoSonus signal output pulse energy vs. wavelength curve



Typical PhotoSonus+ signal and idler output pulse energy vs. wavelength curve

DRAWINGS

PhotoSonus outline drawings (mm)