



OPOTEK

PHOCUS SERIES



Tunable Laser System for Photoacoustic Imaging

Based on the Ring-Cavity optical parametric oscillator (OPO) technology, the Phocus series represents the optimal light source for photoacoustic imaging applications that require high pulse energies and NIR wavelengths for

deep penetration of biological tissue. A customizable, safety-interlocked fiber bundle delivers light from the system to the instrumentation and prevents system operation without fiber attachment.

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FEATURES

- Fully integrated tunable laser system with quick connect cables
- Motorized, hermetically sealed, harmonic/OPO modules
- End-user replaceable flashlamp (100 million shot lifetime) and DI cartridge
- All tunable wavelengths output from a single port
- Computer controlled tuning via control software/software development kit (SDK)
- Flashlamp and/or Q-Switch external triggering
- Temperature controlled, motorized Harmonic(s) (MH)
- Real-time pulse energy monitoring and logging for data normalization (EM)
- Harmonic Auto-Optimization (HAO)
- Flashlamp and/or Q-Switch external triggering
- Warranty: Two years on pump laser, one year on all optics and crystals, mechanics, and electronics. Includes all options except fibers.

OPTIONS

High Energy Fiber Bundle (FBHE): Benchtop.

Can be optimized for either visible (VIS) or near-infrared (NIR) tuning ranges. Externally mounted fiber bundle delivery kit includes, mounts, coupling lens, and fiber bundle. Fiber bundle specifications: 2.0 m long, 3.5 or 5 mm input and output diameter, NA = 0.37.

Energy Meter (EM): Inline and Benchtop.

Real-time pulse energy monitoring, logging for data normalization. Reduces OPO energy by 8%.

IDLER Access (ID): Benchtop.

Extends tuning range to include 740 – 1200 nm
Decreases SIGNAL performance by 10%

Fast Tuning OPO (FT): Inline and Benchtop.

Tunes the OPO to any SIGNAL (or IDLER) wavelength per shot fired.

Fiber Bundle Access to Residual 1064nm Output (1B): Benchtop.

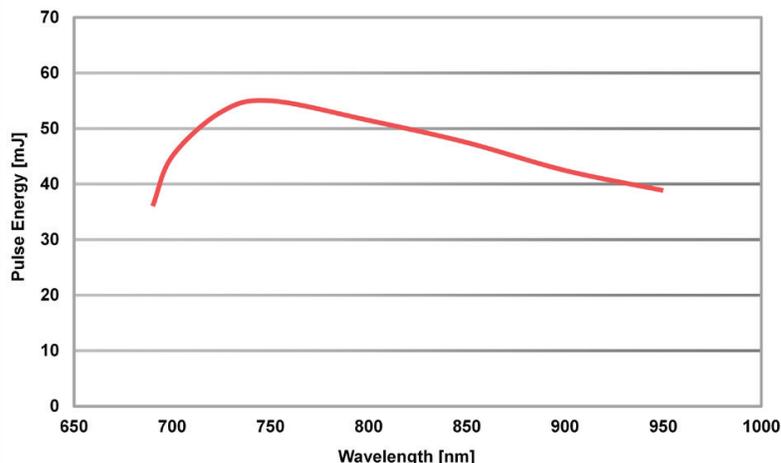
Fiber Bundle Access to Residual 532nm Output (2B): Benchtop.

Wavemeter (WM): Inline and Benchtop.

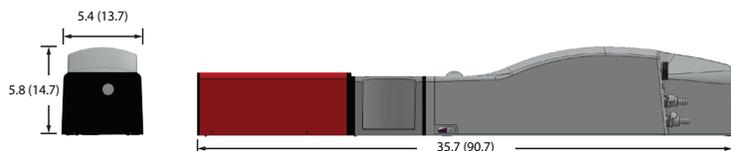
Integrated wavemeter for real-time wavelength monitoring

Extended Warranty (EXW): Inline and Benchtop.

Extends full system warranty for one additional year, for a total of two years. Includes all options except for fibers.



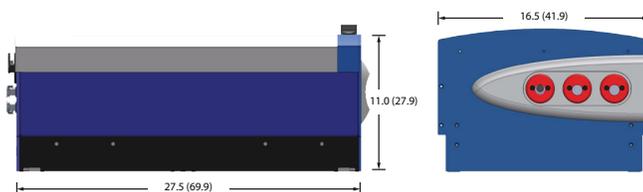
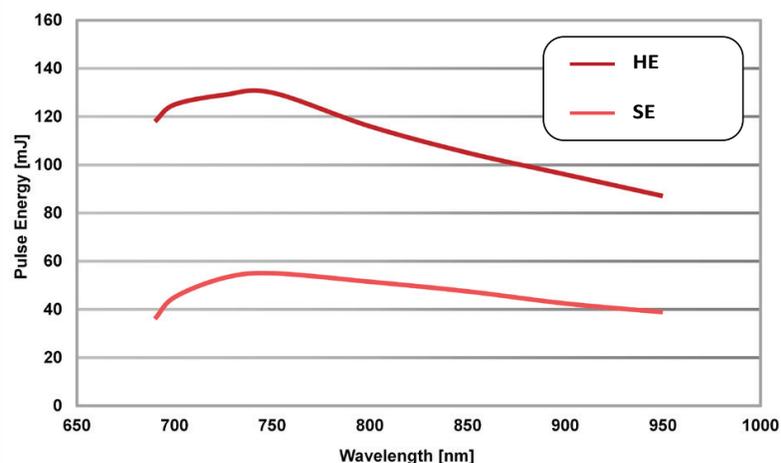
DIMENSIONS



All dimensions approximate in inches (centimeters)

BENCHTOP SE/HE

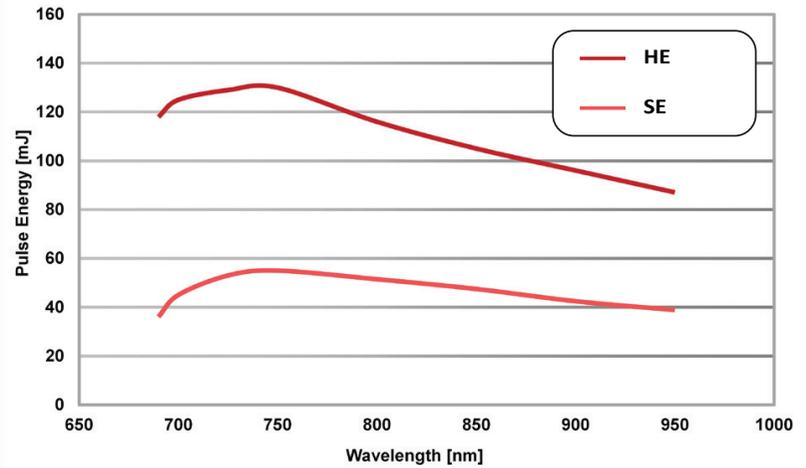
Tuning Range Output: VIS, NIR
Application: Photoacoustic Imaging



All dimensions approximate in inches (centimeters)

FEATURES

- Vibration isolated, fully integrated, light sealed transportable cart with shock-absorbing casters
- Motorized, hermetically sealed, harmonic/OPO modules
- End-user replaceable flashlamp (100 million shot lifetime) and DI cartridge
- All tunable wavelengths output from a single port
- Interlocked fiber bundle output, includes fiber bundle (FB)
- Computer controlled tuning via control software/software development kit (SDK)
- Flashlamp and/or Q-Switch external triggering
- Temperature controlled, motorized Harmonic(s) (MH)
- Harmonic Auto-Optimization (HAO)
- Warranty: Two years on pump laser, one year on all optics and crystals, mechanics, and electronics. Includes all options except fibers.



OPTIONS

Motorized Variable Attenuator (MVA)

End-user installable/removable. Reduces max OPO by 10-15% when installed. Computer controlled. Can only be used with visible and near-infrared wavelengths

High Energy Fiber Bundle (FBHE)

Can be optimized for either visible (VIS) or near-infrared (NIR) tuning ranges.

Externally mounted fiber bundle delivery kit includes, mounts, coupling lens, and fiber bundle. Fiber bundle specifications: 2.0 m long, 3.5 or 5 mm input and output diameter, NA = 0.37.

Fast Tuning OPO (FT)

Tunes the OPO to any SIGNAL (or IDLER) wavelength per shot fired.

Fiber Bundle Access to Residual 1064nm Output (1B)

Fiber Bundle Access to Residual 532nm Output (2B).

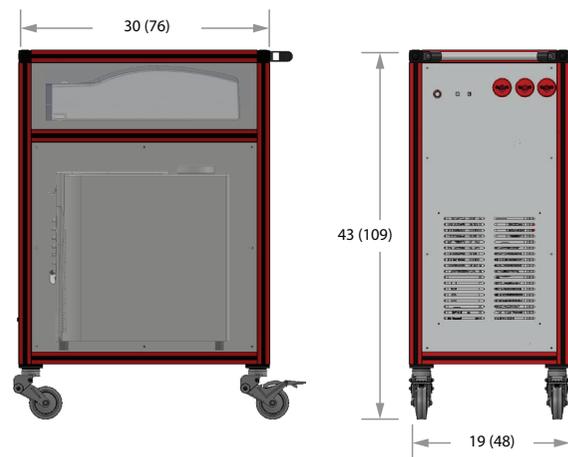
Wavemeter (WM)

Integrated wavemeter for real-time wavelength monitoring

Extended Warranty (EXW)

Extends full system warranty for one additional year, for a total of two years. Includes all options except for fibers.

DIMENSIONS



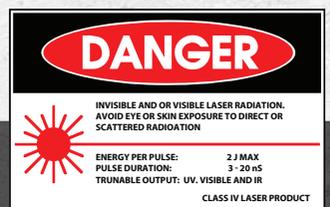
All dimensions approximate in inches (centimeters)

PHOCUS SERIES SPECIFICATIONS

Product Name	Inline	SE Benchtop	HE Benchtop	SE Mobile	HE Mobile
Beam Delivery	free space	fiber delivery	fiber delivery	fiber delivery	fiber delivery
Wavelength range (nm)	690 - 950	690 - 950, 1200 - 2400	690 - 950, 1200 - 2400	690 - 950, 1200 - 2400	690 - 950, 1200 - 2400
Signal	690 - 950	690 - 950	690 - 950	690 - 950	690 - 950
Idler	1200 - 2600	1200 - 2600	1200 - 2600	1200 - 2600	1200 - 2600
Output pulse energy					
Peak OPO energy (mJ)	55	60	150	60	150
Pump laser residual energy (mJ)		20 - 40	70 - 100	20 - 40	70 - 100
Pulse Duration (ns)	5	5	5	5	5
Beam Diameter (mm)	6.5	6.5	9	6.5	9
Beam Divergence (mrad)	< 10	< 10	< 10	< 10	< 10
Polarization					
Signal Beam	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Idler Beam	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Pump Laser					
Pump Wavelength (nm)	532	532	532	532	532
Max pump pulse energy (mJ)	150	150	360 - 400	150	360 - 400
Pulse Duration (ns)	6	6	6	6	6
Beam Divergence (mrad)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pulse Pulse Stability (%)	< 3	< 2	< 2	< 2	< 2
Pulse Repetition Rate (Hz)	20	20	10	20	10
Physical Characteristics					
Unit Size (WxLxH) (mm)	137 x 907 x 147	419 x 699 x 279	483 x 762 x 1092	483 x 762 x 1092	483 x 762 x 1092
Power Supply Size (mm)	262 x 292 x 97	integrated	integrated	integrated	integrated
Umbilical Length (m)	2.5	2.5	2.5	integrated	integrated
Pump laser power supply size (mm)	283 x 507 x 513	283 x 507 x 513	283 x 507 x 513	integrated	integrated
Operating Requirements					
Coolant system	Distilled water				
Room Temperature (°C)	18 - 28	18 - 28	18 - 28	18 - 28	18 - 28
Environment Conditions	Pollution degree 2 or better				
Power Requirements	100 - 240 VAC, 50Hz/60Hz				



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 Trademarks are the property of OPOTEK.
 All specifications are subject to change due to ongoing product improvements.
 All tuning curves represent nominal values.
 All dimensions approximate in inches (centimeters)



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