### Software Controlled



 $Quasi Modo\,Laser\,System$ 



Beam Profile: 532 nm,  $7 \text{ mm} (1/e^2)$ 



Burst Profile: 532 nm



1 ms Burst at 500 kHz Rep Rate Pulse Sequence Flatness > .90

### Spectral Energies, LLC

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www.spectralenergies.com

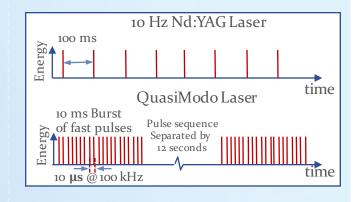


Spec sheets for all products available upon request.



Customizable & Portable Burst-Mode Laser Systems





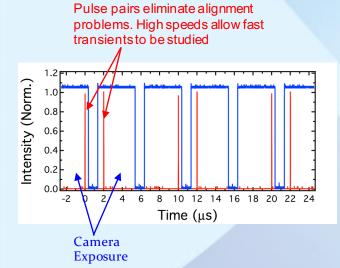
Individual pulse width Pulse frequency within a Burst  Max Number of pulses in Burst  Duration of Burst  Typical pulse energies (mJ) @ 10 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Time between pulse sequences Spectral Bandwidth Beam diameter, 1/e²  4-7 mm Beam quality, M²  < 3  Pulse sequence flatness with optional	SYSTEM SPECS	
Pulse frequency within a Burst  Max Number of pulses in Burst  Duration of Burst  Typical pulse energies (mJ) @ 10 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (ndd) @ 100 kHz  532 nm  500  355 nm  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  4-7 mm  Beam quality, M²  < 3  Pulse sequence flatness with optional  >0.90		Quasimodo
a Burst  Max Number of pulses in Burst  Duration of Burst  Typical pulse energies (mJ) @ 10 kHz  532 nm  500  355 nm  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  50  355 nm  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam quality, M²  70  25  26  27  28  29  29  20  20  20  20  20  20  20  20	Individual pulse width	10-15 ns
Max Number of pulses in Burst  Duration of Burst  1-10 ms  Typical pulse energies (mJ) @ 10 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  25  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam diameter, 1/e²  Pulse sequence  flatness with optional	1 1	2-100 kHz
in Burst  Duration of Burst  1-10 ms  Typical pulse energies (mJ) @ 10 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  500  355 nm  250  266 nm  70  Typical pulse energies (mJ) @ 100 kHz  532 nm  500  355 nm  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Seam diameter, 1/e²  Beam diameter, 1/e²  Pulse sequence flatness with optional  1-10 ms  1-	_	100 @ 10 kHz
Typical pulse energies (mJ) @ 10 kHz  532 nm 500 355 nm 250 266 nm 70  Typical pulse energies (mJ) @ 100 kHz  532 nm 50 355 nm 25 37 37 38 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30		1000 @ 100 kHz
(mJ) @ 10 kHz         532 nm       500         355 nm       250         266 nm       70         Typical pulse energies (mJ) @ 100 kHz       50         532 nm       50         355 nm       25         266 nm       3         Time between pulse sequences       12 seconds         Spectral Bandwidth       < 1 GHz	Duration of Burst	1-10 ms
355 nm       250         266 nm       70         Typical pulse energies (mJ) @ 100 kHz       50         532 nm       50         355 nm       25         266 nm       3         Time between pulse sequences       12 seconds         Spectral Bandwidth       < 1 GHz		
Typical pulse energies (mJ) @ 100 kHz  532 nm  50  355 nm  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam quality, M²  70  10  10  11  12  12  12  12  13  14  17  18  18  19  19  10  10  10  10  10  10  10  10	532 nm	500
Typical pulse energies (mJ) @ 100 kHz  532 nm 50 355 nm 25 266 nm 3 Time between pulse sequences Spectral Bandwidth Beam diameter, 1/e² Beam quality, M²  7  7  8  7  8  7  8  7  7  7  7  7  7	355 nm	250
(mJ) @ 100 kHz  532 nm  50  355 nm  25  266 nm  3  Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam quality, M²  < 3  Pulse sequence flatness with optional  >0.90	266 nm	70
25 266 nm 3 Time between pulse sequences Spectral Bandwidth Beam diameter, 1/e² Beam quality, M²  Pulse sequence flatness with optional  25 12 seconds 12 seconds 4-7 mm 4-7 mm 5 cm 5 cm 12 seconds 25 26 27 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20	71 1	
266 nm 3  Time between pulse sequences  Spectral Bandwidth < 1 GHz  Beam diameter, 1/e² 4-7 mm  Beam quality, M² < 3  Pulse sequence flatness with optional >0.90	532 nm	50
Time between pulse sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam quality, M²  Pulse sequence flatness with optional	355 nm	25
sequences  Spectral Bandwidth  Beam diameter, 1/e²  Beam quality, M²  Pulse sequence flatness with optional	266 nm	3
Beam diameter, 1/e <sup>2</sup> 4-7 mm  Beam quality, M <sup>2</sup> < 3  Pulse sequence flatness with optional >0.90		12 seconds
Beam quality, M <sup>2</sup> < 3  Pulse sequence flatness with optional >0.90	Spectral Bandwidth	<1GHz
Pulse sequence flatness with optional >0.90	Beam diameter, 1/e²	4-7 mm
flatness with optional >0.90	Beam quality, M <sup>2</sup>	< 3
tailored profile control		>0.90

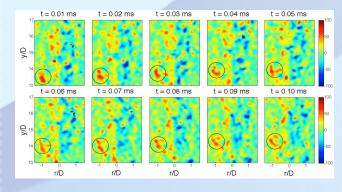
For export: 1064 nm energy is limited to 1 J/pulse and 532 nm energy is limited to 500 mJ/pulse at 10 kHz.

IR energy at higher repetition rates will scale down linearly.

For custom specifications please contact us.

#### 100-kHz PIV for Turbulent Flows



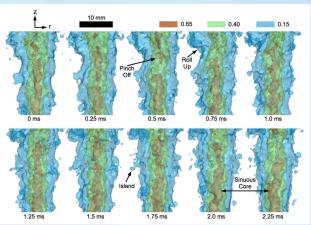


Exp. Fluids., 57:192 (2016) Approved for public release (88ABW-2016-2828)



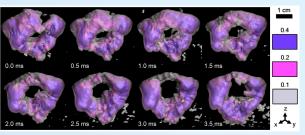
CLASS 4 LASER PRODUCT INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

## 20 kHz Tomographic Imaging of the Concentration Field



Proc. .Combust. Inst., 36, 4611–4618 (2017) Approved for public release (88ABW-2015-6074)

# 3D OH Planar Laser-Induced Fluorescence



Optica, 4, 897–902 (2017) Approved for public release (88ABW-2017-1141)