MOPAW-3

PULSE SHAPING MOPA LASER PLATFORM

INO introduces its new air-cooled, constant energy, pulsed fiber laser with programmable optical temporal profile, operating in three distinct regimes: nanosecond, picosecond burst and picosecond on demand.

MOPAW-3 Key Specs

- **mJ level**
- **50 kW peak power**
- **> 25 W average power**
- **1064 nm**

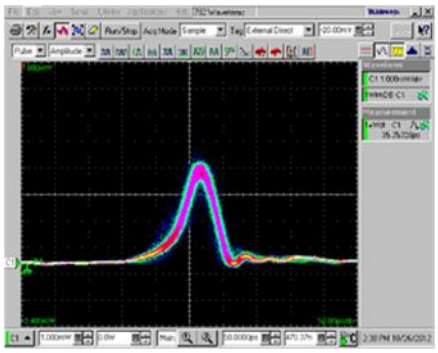
Features

- Constant output pulse energy fiber laser
- Gain saturation precompensation
- Polarized output
- Narrow linewidth
- Near diffraction-limited beam quality

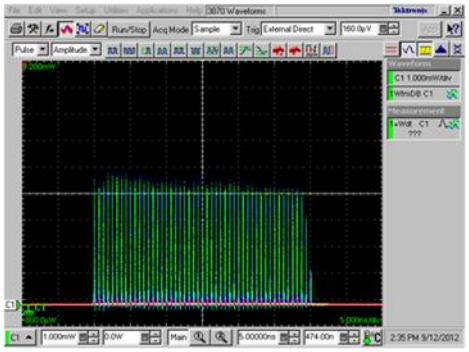
Applications

- Stealth dicing
- Thin film patterning
- PV-cell scribing
- Precision marking
- Memory repair
- Micromilling
- Via hole drilling

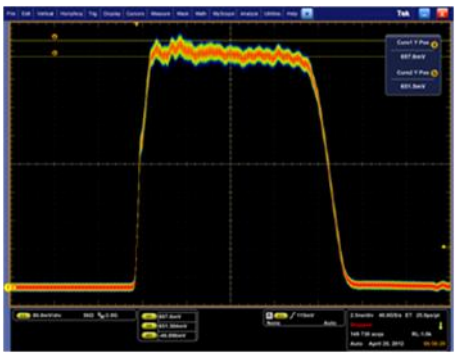
30 ps, single ps pulse



30 ns, ps burst



10 ns, square



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MOPAW-3 25W PM, 35 ps Pulsed Laser System
Typical Specifications

Parameters	Unit	Specifications		Comments
Operating principle		Programmable pulse-shaped nanosecond and picosecond fiber laser operating as a constant pulse energy laser source		Pulse energy and shape will stay constant up to the maximum average output power of the laser independently of the repetition rate
		ns regime	**ps regime**	
Spectral characteristics				
Wavelength	nm	1064.8 ± 0.2	1064.4 ± 0.2	
Spectral bandwidth	nm	< 1	< 5	Full Width @ -10dB
Out of band optical power	%	< 10		
Temporal characteristics				
Nanosecond envelope risetime	ns	< 2.5		10-90% risetime, gain-switching of the seed diode is completly suppressed Faster risetime possible with gain-switching od the seed diode
Nanosecond envelope duration range	ns	2 to 500		Longer pulse patterns (up to 17 µs) are possible upon request
Single ps pulse duration	ps	NA	< 35	
PS pulse train repetition rate	MHz	NA	240, 480, 960 and 1920	
Pulse shaping time resolution	ns	1.04		
Amplitude and stability characteristics				
Pulse shaping amplitude resolution	levels	8192 (13-bits)		
Nanosecond envelope amplitude stability	% RMS	< 1		Over 30 sec
Nanosecond envelope energy stability	% RMS	< 1		Over 30 sec
Average power stability	% RMS	< 1		Measured over a 20 min.-long period
Power and energy characteristics				
Maximum pulse energy (nanosecond envelope)	µJ	250	250	Higher energy versions are possible upon request
Maximum peak power	kW	50		
Maximum average power	W	25		Higer power versions are possible upon request
Beam characteristics				
Beam quality, M^2		< 1.3		X/Y-axis (D4σ)
Output beam diameter	mm	4.0±0.5		X/Y-axis (D4σ)
Beam divergence (full-angle)	mrad	< 1		X/Y-axis (D4σ)
Beam roundness	%	> 90		0-2m from laser output aperture (numerical beam propagation)
Beam waist astigmatism	%	< 15		
Beam waist asymmetry	%	< 15		
Polarization type		linear, horizontal		
Polarization extinction ratio	dB	> 20		
Output beam height	mm	80		
Operational characteristics				
Allowable pulse repetition range (external trigger)	kHz	single shot up to 500		Higher repetition rates are possible upon request
Allowable pulse repetition range (internal trigger)	kHz	0.029 to 500		Higher repetition rates are possible upon request
System warm-up time	min	< 60		
External trigger to optical output latency	µs	> 90 < 95		
User interface				
Communication port		USB		
External trigger in connector type		BNC		
External trigger out connector type		BNC		
Interlock connector type		BNC		
Laser emission gating connector type		BNC		
Mechanical specifications				
Laser head dimensions	mm	590 x 170 x 130		Length x width x height
Master oscillator dimensions	mm	495 x 175 x 255		Length x width x height, 4U rackmount kit available
Power supply dimensions	mm	400 x 480 x 88		Length x width x height, 2U rackmount
Umbilical length	m	3		Between master and laser head
Laser head weight	kg	11.2		
Master oscillator weight	kg	13.8		
Power supply weight	kg	6.4		
Cooling		air-cooled		
Environmental conditions				
Operating environmental conditions		15 ~ 35 ºC 20 ~ 70% relative humidity Shock / vibration < 0.1 G		
Non-operating environmental conditions		-25 ~ 60 ºC 0 ~ 100% relative humidity Shock / vibration < 10 G		
Electrical requirements				
Input power supply		Single phase, 90-264VAC 47-63Hz 12A/115VAC 6A/230VAC		