

Nd:Glass SYSTEMS

Nanosecond High Energy Laser Systems



160 J @ 1053 nm MM laser system

Ekspla offers wide range of high energy Nd:Glass laser systems. Typically Nd:Glass laser comprise

SLM diode pumped master oscillator, pre-amplifier, pulse shaper and main lamp pumped amplifiers.

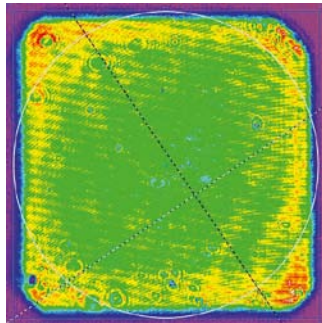
SPECIFICATIONS

Parameter	Value
Center wavelength	1053 – 1060 nm
Pulse width	500 ps – 20 ns
Max pulse energy single channel	150 J
Beam spatial profile (near field)	"Top Hat" across 80% of beam cross-section (beam local intensity fluctuation max $\pm 20\%$ from the average intensity)
Pulse repetition rates	depending on system configuration from 1 shot in 1 min to 1 shot in 20 min for output energies > 10 J
Shot to shot stability	below 2.0% rms @ fundamental in single channel configuration
Linewidth	$< 0.02 \text{ cm}^{-1}$ @ 2 ns for single longitudinal mode (SLM), $< 1 \text{ cm}^{-1}$ @ 4 ns for multimode (MM)
Pre-pulse contrast	better than $1 : 10^5$
Polarization contrast	$> 100 : 1$
Output isolation from back-reflected light	$> 500 : 1$ (Faraday isolator contrast)
Optical pulse jitter	typical < 0.2 ns RMS, optional < 10 ps RMS
Flashlamp lifetime	2×10^5 shots typical (typically > 3000 hours of non-stop operation at PRR 1 shot/minute)
Pump diode lifetime	$> 10\,000$ hours typical

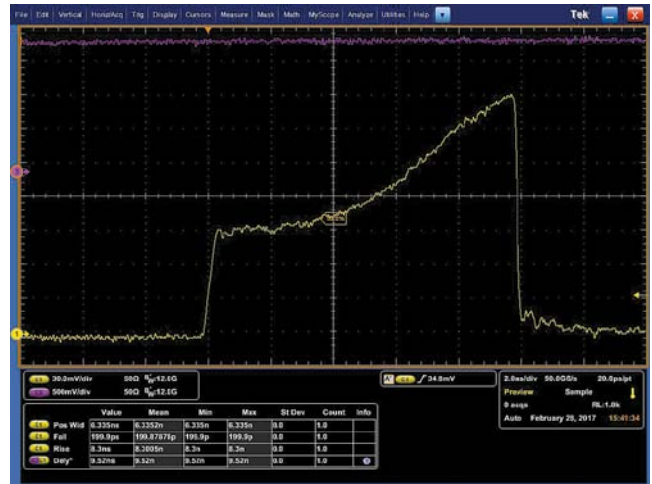
FEATURES

- ▶ *Front end options*
 - Diode pumped SLM or MM master oscillator featuring excellent stability, live time and maintenance-free operation based on Nd:glass or Nd:YLF
 - Temporally shaped seeder / regenerative amplifier configuration allowing application of smoothing technics
 - Wave front correction system based on DFM
- ▶ *Optional SBS compressor ensuring high contrast pulses and controllable pulse duration*
- ▶ *Flashlamp / LD pumped pre-amplifier*
- ▶ *Up to $\varnothing 60$ mm aperture Nd:glass power amplifiers*
- ▶ *Laser protection by Faraday isolators preventing damage of laser rods by back-reflected light*
- ▶ *Optimized design for maximum pulse energy extraction*
- ▶ *Separately controlled PFN circuits for each flash lamp*
- ▶ *Diagnostics and monitoring of system status based on microprocessor controller*
- ▶ *Software guide for step-by-step performance check at designated control points*
- ▶ *Optional second and third harmonics generators*

PERFORMANCE

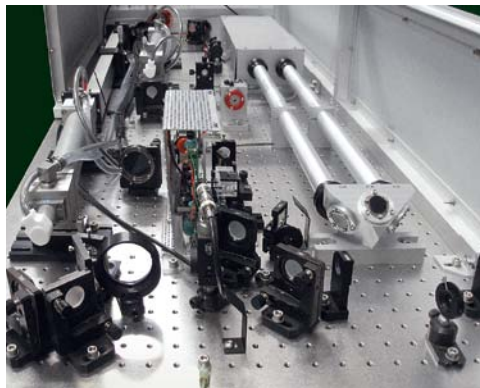


Spatial shaping of 33 J @ 1053 nm output pulses (beam of rectangular shape)

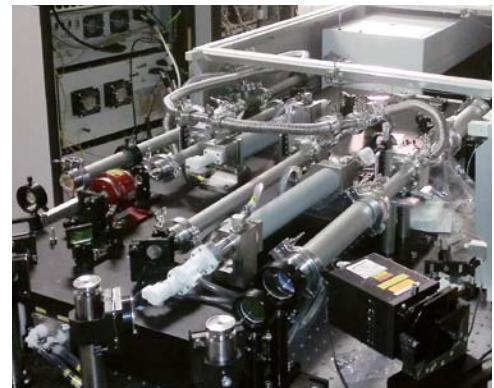


One example of the pulse wave form at the output @ 33 J (fundamental)

CUSTOM INSTALATIONS



Amplifier system delivering 1 J at center wavelength 1060 nm, pulse width 800 ps and ~ 4 nm (FWHM) gain bandwidth



12 J @ 527 nm laser system during development stage



30 J Nd:glass system featuring arbitrary shaped temporal pulse shape