# Q-smart EX

## Compact pulsed Nd:YAG lasers with EXtended configuration for improved spatial profile



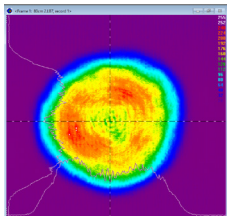

## MAIN FEATURES

- Up to 700 mJ @ 1064 nm
- Optimized beam profile with reduced hot spots and spatial modulation
- Robust and field proven technology
- Built to last thanks to ceramic reflectors and 100 million shots flashlamp lifetime warranty
- Plug & play harmonics modules down to 213 nm, with automatic phase-matching
- Cables and cooling lines fully disconnectable for easy integration
- Intuitive touch screen interface and GUI
- Universal voltage
- SLM option (Single Longitudinal Mode) for narrow line operation

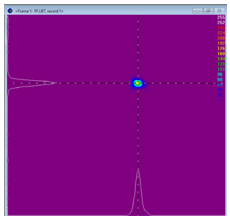
## MAIN APPLICATIONS

- **DYE, OPO & Ti:Sa PUMPING**
- **LiDAR**
- **LIBS**
- **MATERIAL PROCESSING**
- **ABLATION**
- **PULSED LASER DEPOSITION**
- **PHOTOACOUSTIC IMAGING**
- **SPECTROSCOPY**

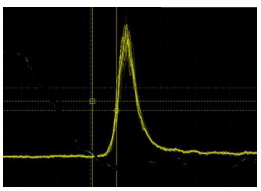
### Typical beam profiles



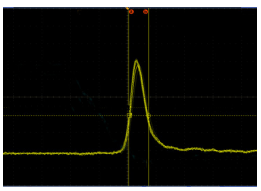
Near field at 1 m @ 1064 nm



Far field @ 1064 nm



6 ns standard temporal profile @ 1064 nm (1 GHz oscilloscope)



6 ns temporal profile @ 1064 nm with SLM option (1 GHz oscilloscope)

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www.quantel-laser.com

Many options and configurations are available. Please contact Lumibird to find the best match for your needs and compatibility between options.

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# Q-smart EX

## Compact pulsed Nd:YAG lasers with EXtended configuration for improved spatial profile

Quantel laser BY LUMIBIRD

## SPECIFICATIONS

| | | Q-smart EX | |
|---|---|---|---|
| Repetition rate (Hz) | | 10 | 10-SLM |
| Energy per pulse (mJ) | 1064 nm | 700 | 595 |
| | 532 nm | 350 | 235 |
| | 355 nm | 180 | 150 |
| | 266 nm | 85 | 55 |
| | 213 nm | On request | |
| Pulse duration (ns) [1] | 1064 nm | ~ 6 | |
| | 532 nm | ~ 5 | |
| | 355 nm | | |
| | 266 nm | | |
| Beam diameter (mm) [2] | 1064 nm | ~ 8 | |
| Beam divergence (mrad) [3] | 1064 nm | < 0.5 | |
| $M^2$ [4] | 1064 nm | ≤ 2 | |
| Spatial profile @ 1064 nm [5] (fit to Gaussian) | Near Field [6] | > 0.7 | |
| | Far Field [7] | > 0.90 | |
| Polarization ratio (%) [8] | 1064 nm | > 80 | |

(1) Measured at FWHM with fast photodiode and 1 GHz oscilloscope
(2) At the output of the laser
(3) Full angle, at 1/e² of the peak
(4) At 1/e² of the peak, measured by Spiricon LBA FWB
(5) Least square fit to Gaussian (perfect fit = 1)
(6) Measured at 1 m from laser output
(7) Measured at the focal plane of a 2 m focus lens
(8) Polarization is horizontal @ 1064, 355 & 266 nm and vertical @ 532 & 213 nm

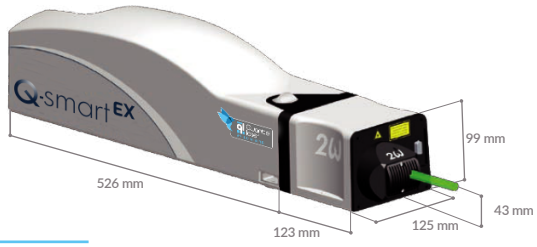
| | | |
|---|---|---|
| Pulse to pulse energy stability (%) [9] | 1064 nm | ± 2 (0.6) |
| | 532 nm | ± 4 (1.3) |
| | 355 nm | ± 6 (2) |
| | 266 nm | ± 8 (2.6) |
| Power drift (%) [10] | 1064 nm | ± 3 |
| | 532 nm | ± 5 |
| | 355 nm | ± 5 |
| | 266 nm | ± 10 |
| Pointing stability (µrad) [11] | All wavelengths | < 40 |
| Jitter @ 1064 nm (ns) [12] | Standard | ± 0.5 |
| Linewidth @1064 nm ($cm^{-1}$) | Standard | ≤ 0.7 [13] |
| | SLM | ≤ 0.005 [14] |

(9) Peak to peak, 100% of the shots (RMS)
(10) Over 8 hours, without readjustment of phase-matching, 18°C < T < 28°C
(11) Measured by Spiricon LBA FWB RMS, on 200 pulses at the focal plane of a 2 m focus lens
(12) With respect to Q-Switch trigger, measured at half width of 500 accumulated shots for 99 % of the shots
(13) Measured at FWHM with a grating spectrometer with 0.045 $cm^{-1}$ resolution
(14) Measured at FWHM with a slow scan Fabry-Perot etalon

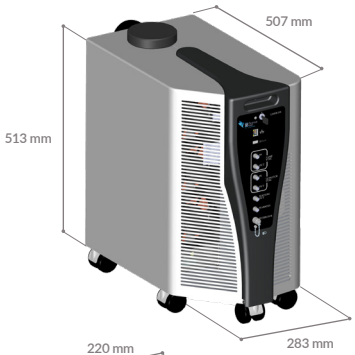
| OTHER INFORMATION | | |
|---|---|---|
| Power requirements | | 100-240 VAC, 50/60 Hz, single phase, 1100 VA |
| Cooling | | Water to air |
| Operating temperature | | + 18 °C to + 28 °C |
| Storage temperature [15] | | - 10 °C to + 50 °C |
| Cable length (m) | | 3 [16] |
| Flashlamps warranty | | 100 million shots [17] |
| Weight (kg) | Laser head | 7 |
| | Harmonic modules | 2.1 |
| | Integrated cooling & electronics | 27 |

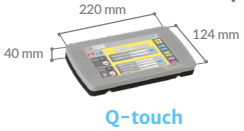
(15) System rinsed and drained with ethylene glycol/water mixture
(16) Other lengths up to 10 m on request
(17) 80% of energy, or 1 year, whichever comes first

### Laser head




### Integrated cooling & electronics

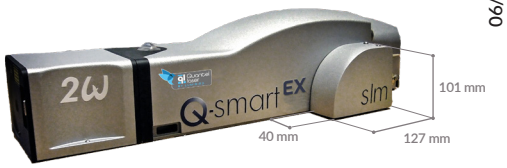



Q-touch

## OPTIONS

Single Longitudinal Mode option (SLM)




Electronics not shown




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