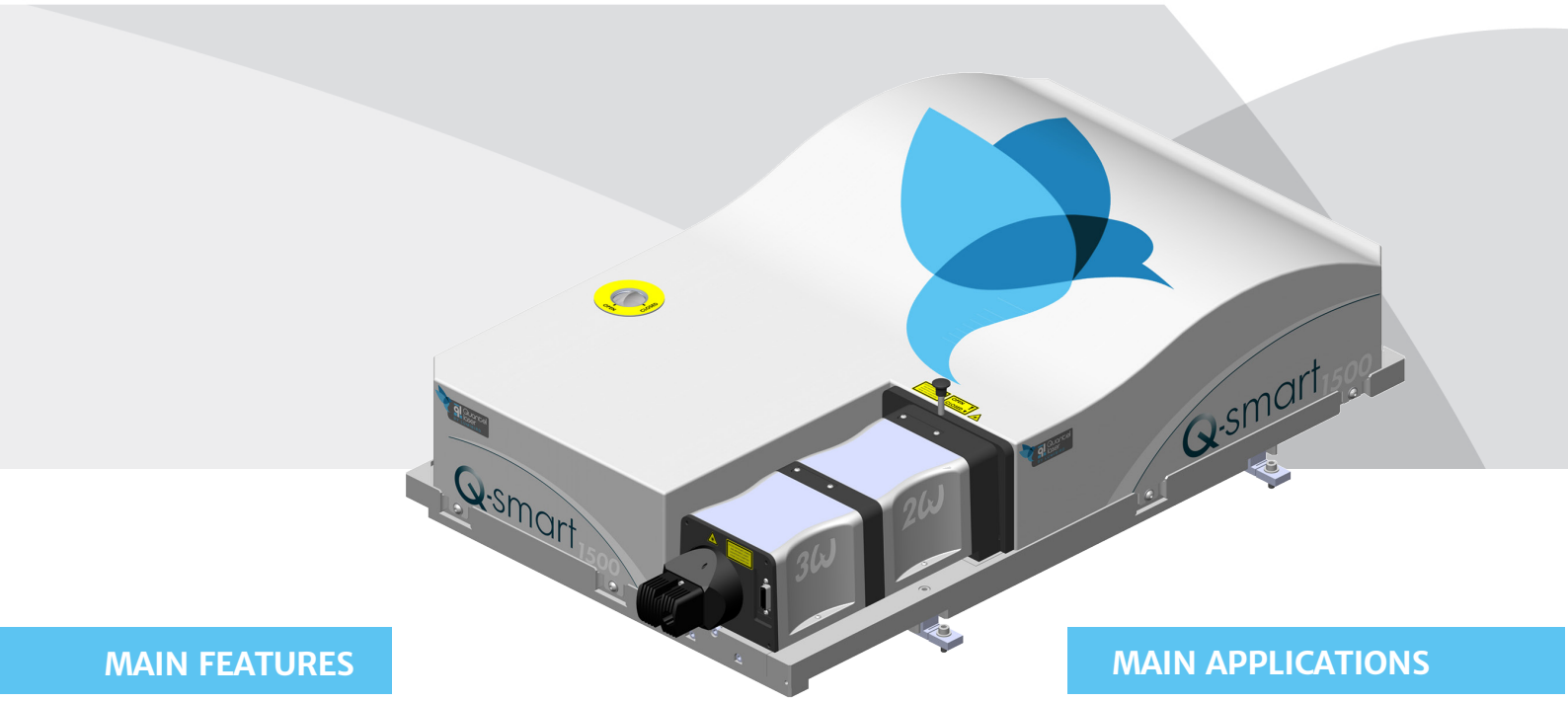
Q-smart HE

Compact High-Energy pulsed Nd:YAG lasers with excellent beam quality and versatility

Quantel laser BY LUMIBIRD



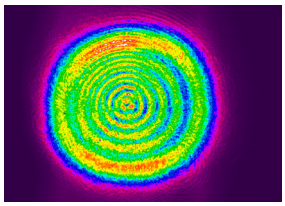
MAIN FEATURES

- Up to 2.3 J @ 1064 nm
- Robust and field-proven Q-smart™ technology
- Built to last thanks to ceramic reflectors
- Flashlamp warranty up to 50 million shots for operation without downtime
- Plug & play harmonic modules for user-friendly wavelength switch
- Automatic crystal phase-matching for hands-free operation
- Cables and cooling lines fully disconnectable for easy integration
- Intuitive GUI interface
- SLM option (Single Longitudinal Mode) for long coherence length
- Optional chiller for use in any environment

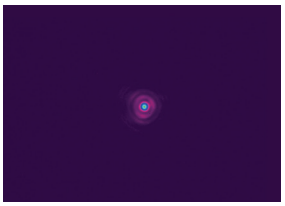
MAIN APPLICATIONS

- **LiDAR**
- **INSTRUMENTATION**
- **PLD**
- **DYE, OPO & Ti:Sa PUMPING**
- **SPECTROSCOPY**
- **LIF**
- **COMBUSTION**

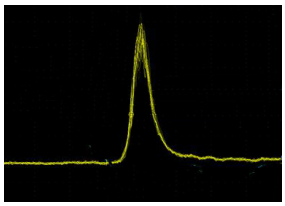
Typical beam profiles



Near field 1.5 J @ 1064 nm, 10 Hz



Far field 1.5 J @ 1064 nm, 10 Hz



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

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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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SPECIFICATIONS

		Q-smart 1200		Q-smart 1500	Q-smart 2300
Repetition rate (Hz) [1]		10	20	10	
Energy per pulse (mJ)	1064 nm	1200	1050	1500	2300
	532 nm	575 / 650 [2]	550	750 / 850 [2]	1100 / 1350 [2]
	355 nm	280 / 350 [3]	350	400 / 520 [3]	620 / 850 [3]
	266 nm	110	90	130	200
Pulse duration (ns) [4]	1064 nm	6 - 10			
Beam diameter (mm) [5]	1064 nm	≤ 10			≤ 13
Beam divergence (mrad) [6]	1064 nm	≤ 0.5			
M^2 [7]	1064 nm	≤ 2	≤ 3	≤ 2	≤ 3
Spatial profile @ 1064 nm [8] (fit to Gaussian)	Near field [9]	≥ 0.7	≥ 0.65	≥ 0.7	
	Far field [10]	≥ 0.9	≥ 0.85	≥ 0.9	
Polarization ratio (%) [11]	1064 nm	≥ 90	≥ 80	≥ 90	≥ 80

(1) Other repetition rates on request
(2) 532 nm high energy version
(3) 355 nm high energy version
(4) Measured at FWHM with fast photodiode and 1 GHz oscilloscope
(5) At the output of the laser
(6) Full angle, at $1/e^2$ of the peak
(7) At $1/e^2$ of the peak, measured by Spricon LBA FWB
(8) Least square fit to Gaussian (perfect fit = 1)
(9) Measured at 1 m from laser output
(10) Measured at focal plane of a 2 m focus lens
(11) Polarization is horizontal @ 1064, 355 & 266 nm and vertical @ 532 nm

		10 Hz	20 Hz
Pulse to pulse energy stability (%) [12]	1064 nm	± 2.2 (0.7)	± 3 (1)
	532 nm	± 4 (1.3)	± 5.5 (1.8)
	355 nm	± 6 (2)	± 7.5 (2.5)
	266 nm	± 8 (2.6)	± 9 (3)
Power drift (%) [13]	1064 nm	± 3	
	532 nm	± 5	
	355 nm	± 5	
	266 nm	± 10	
Pointing stability (µrad) [14]	1064 nm	< 40	
Linewidth @1064 nm (cm^{-1})	Standard [15]	≤ 0.7	
	SLM [16] option	≤ 0.005	

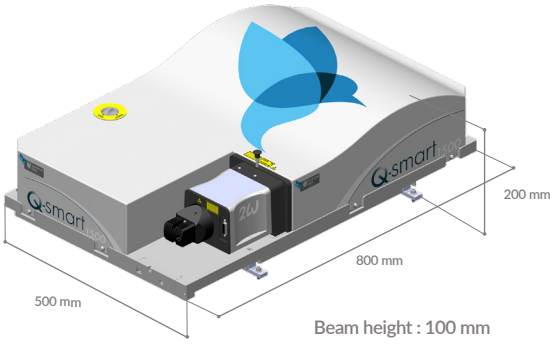
(12) Peak-to-peak (RMS), 100% of shots on 200 consecutive shots
(13) Over 8 hours for $\Delta T° \leq \pm 3°C$
(14) Measured with Spiricon LBA-100, rms, on 200 pulses at the focal plane of a 2 m focus lens
(15) Measured at FWHM with a grating spectrometer with 0.045 cm^{-1} resolution
(16) Measured at FWHM with a slow scan Fabry-Perot etalon.
Energy reduction with SLM: ≤ 15% @ 1064 nm, 532 nm & 266 nm, ≤ 5% @ 355 nm

OTHER INFORMATION

Power requirements		240 V (110 V on request) 16 to 20 A, 50/60 Hz
Cooling		Water to water Optional chiller (stand alone or 19" rack)
Operating temperature		+ 18 °C to + 28 °C
Storage temperature [17]		- 10 °C to + 50 °C
Cable length (m)		3 [18]
Flashlamps warranty		50 million shots [19]
Weight (kg)	Laser head	45
	Harmonic modules	2.1
	Integrated cooling & electronics	50 / 70 [20]

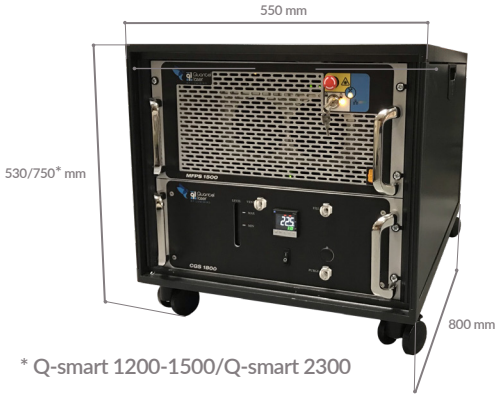
(17) System rinsed and drained with ethylene glycol/water mixture
(18) Other lengths on request. Some losses are to be expected.
(19) 80% of energy, or 1 year, whichever comes first
(20) Q-smart 1200-1500 / Q-smart 2300

Laser head



Beam height : 100 mm

Integrated cooling & electronics



* Q-smart 1200-1500/Q-smart 2300

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