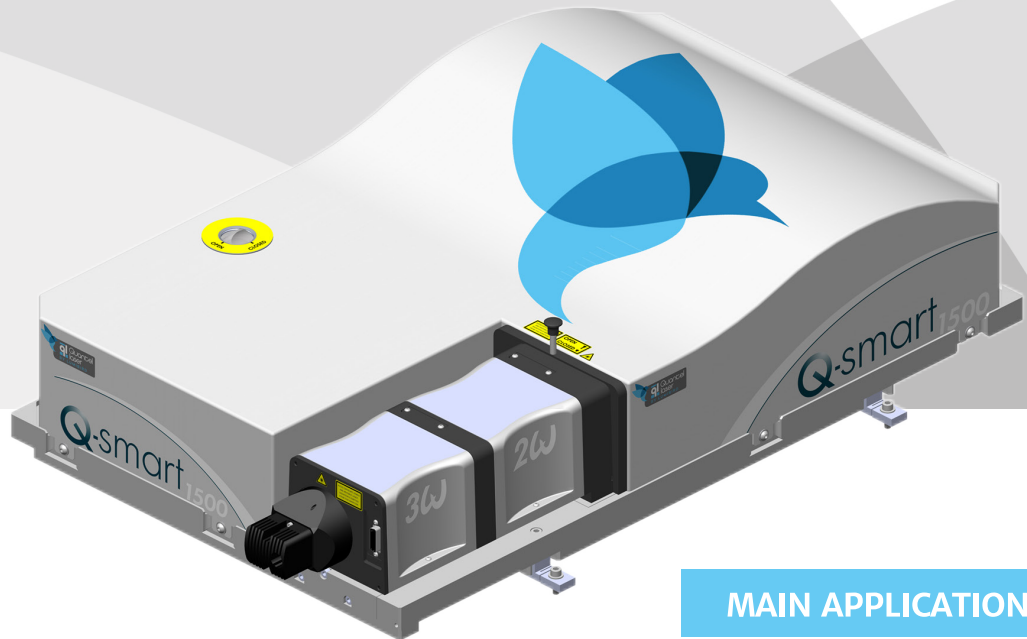


# Q-smart HE

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



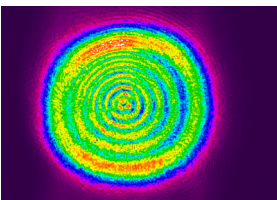
## MAIN FEATURES

- Up to 2.3 J @ 1064 nm
- Robust and field proven technology
- Built to last thanks to ceramic reflectors and long flashlamp life time warranty
- Plug & play harmonic modules with automatic phase-matching
- Cables and cooling lines fully disconnectable
- Easy to use and maintain
- Optional chiller
- Intuitive GUI interface
- SLM option (Single Longitudinal Mode)

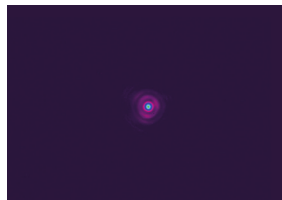
## MAIN APPLICATIONS

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

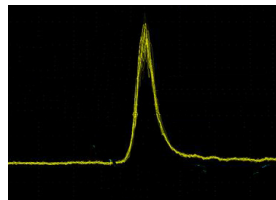
## Typical beam profiles



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)

[www.quantel-laser.com](http://www.quantel-laser.com)

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your needs and compatibility between options.

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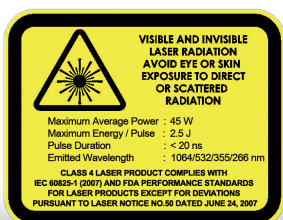
## SPECIFICATIONS

|                                                               |                           | Q-smart 1200             |                          | Q-smart 1500             |                          | Q-smart 2300             |
|---------------------------------------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Repetition rate (Hz)                                          |                           | 10                       | 20                       | 10                       | 20                       | 10                       |
| Energy per pulse (mJ)                                         | 1064 nm                   | 1200                     | 1000                     | 1500                     | 1400                     | 2300                     |
|                                                               | 532 nm                    | 575 / 650 <sup>(1)</sup> | 480 / 540 <sup>(1)</sup> | 750 / 850 <sup>(1)</sup> | 660 / 750 <sup>(1)</sup> | 1150/1300 <sup>(1)</sup> |
|                                                               | 355 nm                    | 280 / 350 <sup>(2)</sup> | 220 / 270 <sup>(2)</sup> | 400 / 520 <sup>(2)</sup> | 360 / 460 <sup>(2)</sup> | 620 / 850 <sup>(2)</sup> |
|                                                               | 266 nm                    | 110                      | 80                       | 130                      | 100                      | 200                      |
| Pulse duration (ns) <sup>(3)</sup>                            | 1064 nm                   | 5 - 10                   |                          |                          |                          |                          |
| Beam diameter (mm) <sup>(4)</sup>                             | 1064 nm                   | ≤ 10                     |                          |                          |                          | ≤ 12                     |
| Beam divergence (mrad) <sup>(5)</sup>                         | 1064 nm                   | ≤ 0.5                    |                          |                          |                          |                          |
| M <sup>2</sup> <sup>(6)</sup>                                 | 1064 nm                   | ≤ 2                      |                          |                          |                          |                          |
| Spatial profile @ 1064 nm <sup>(7)</sup><br>(fit to Gaussian) | Near field <sup>(8)</sup> | ≥ 0.7                    |                          |                          |                          |                          |
|                                                               | Far field <sup>(9)</sup>  | ≥ 0.9                    |                          |                          |                          |                          |
| Polarization ratio (%) <sup>(10)</sup>                        | 1064 nm                   | ≥ 90                     |                          |                          |                          | ≥ 80                     |

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

|                                                        |                            |           |
|--------------------------------------------------------|----------------------------|-----------|
| Pulse to pulse<br>energy stability (%) <sup>(11)</sup> | 1064 nm                    | ± 2 (0.6) |
|                                                        | 532 nm                     | ± 4 (1.3) |
|                                                        | 355 nm                     | ± 6 (2)   |
|                                                        | 266 nm                     | ± 8 (2.6) |
| Power drift (%) <sup>(12)</sup>                        | 1064 nm                    | ± 3       |
|                                                        | 532 nm                     | ± 5       |
|                                                        | 355 nm                     | ± 5       |
|                                                        | 266 nm                     | ± 10      |
| Pointing stability (μrad) <sup>(13)</sup>              | 1064 nm                    | < 40      |
| Linewidth @1064 nm (cm <sup>-1</sup> )                 | Standard <sup>(14)</sup>   | ≤ 0.7     |
|                                                        | SLM <sup>(15)</sup> option | ≤ 0.005   |

- (11) Peak-to-peak (RMS), 100% of shots  
 (12) Over 8 hours for ΔT° ≤ ± 3°C  
 (13) Measured with Spiricon LBA-100, rms, on 200 pulses at the focal plane  
 of a 2 m focus lens  
 (14) Measured at FWHM with a grating spectrometer with 0.045 cm<sup>-1</sup> resolution  
 (15) Measured at FWHM with a slow scan Fabry-Perot etalon, ≤ 20% energy reduction @ 1064 nm

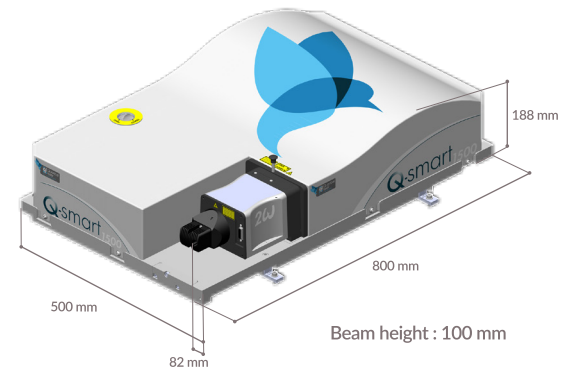


## OTHER INFORMATION

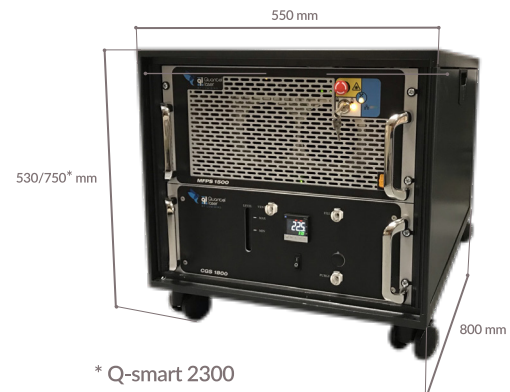
|                                     |                                  |                                                                 |
|-------------------------------------|----------------------------------|-----------------------------------------------------------------|
| Power requirements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

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

## Laser head



## Integrated cooling & electronics



\* Q-smart 2300

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