

Quantas Q1-100

DIODE PUMPED AIR-COOLED Q-SWITCHED LASER

FEATURES

Up to **25 mJ** pulse energy at 1064 nm

Air cooled (no water)

Short pulse duration **< 10 ns**

100 Hz repetition rate

Built-in sync pulse generator for triggering of user equipment

Remote control via built-in **Ethernet** or **Wi-Fi** interface

Optional 2nd, 3rd, 4th or 5th harmonic generators

Optional attenuator for fundamental, second, third harmonic

Optional fiber coupled output

Guaranteed **> 1 Gshot** lifetime

APPLICATIONS

Light Induced Breakdown Spectroscopy (LIBS)

LCD repair

Laser ablation

Time-of-Flight Spectroscopy (TOFS)

Light Induced Fluorescence (LIF) Spectroscopy

Flash photolysis

Matrix Assisted Laser Desorption/Ionization (MALDI)

Pulsed Light Deposition (PLD)

Light Detection And Ranging (LIDAR)

Remote sensing

Particle Image Velocimetry (PIV)



The new Quantas Q1-100 series diode pumped, fully air-cooled, Q-switched laser designed for wide range of applications that require high peak power pulses. Due good thermal properties of Nd:YAG crystal laser delivers up to 25 mJ at 100 Hz repetition rate.

This laser is ideal tool for applications like Light Induced Breakdown Spectroscopy (LIBS), LCD repair, semiconductor failure analysis, laser ablation, remote sensing and many others.

Less than 10 ns pulse duration allows efficient fundamental wavelength conversion to higher harmonics with shortest wavelength available of 213 nm. Wavelength extension into infrared range by use of OPO is available by request.

TEC based cooling eliminate risks associated with water cooling (like leaks, circuit shortening etc.) as well as reduce running cost due to no maintenance required.

Low jitter triggering pulses for user equipment are available with up to 300 μ s lead in internal triggering mode. If required, laser pulsing can be externally triggered from delay generator.

Laser controlled via built-in Ethernet port through web-server with option to add Wi-Fi adapter. It allows users to monitor and control laser remotely.



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SPECIFICATIONS ¹⁾

| MODEL | Quantas-1064 | | | | |
|---|-------------------------------------|----------------------|---------|---------|---------|
| | Q1A-50 | Q1A-100 | Q1B-100 | Q1C-100 | Q1D-100 |
| Wavelength, nm | 1064 nm | | | | |
| Pulse energy | 5 mJ | 2.5 mJ | 8 mJ | 15 mJ | 25 mJ |
| Typical pulse duration ²⁾ | < 10 ns | | | | |
| Pulse to pulse energy stability ³⁾ | < 0.5 % RMS | | | | |
| Power drift ⁴⁾ | ± 3.0 % | | | | |
| Pulse repetition rate ⁵⁾ | 50 Hz | 100 Hz ⁵⁾ | | | |
| Beam profile | bell-shaped, > 75 % fit to Gaussian | | | | |
| Beam divergence ⁶⁾ | < 1.2 mrad | | | | |
| Polarization | linear, horizontal at 1064 nm | | | | |
| Typical beam diameter ⁷⁾ | 2.5 mm | | | | |
| Jitter ⁸⁾ | < 0.5 ns RMS | | | | |

OPTIONAL HARMONICS GENERATOR MODULE ⁹⁾

| Pulse energy | Q1A-50 | Q1A-100 | Q1B-100 | Q1C-100 | Q1D-100 |
|--------------|---------|---------|---------|---------|---------|
| 532 nm | 2.5 mJ | 1.25 mJ | 4 mJ | 7.5 mJ | 12.5 mJ |
| 355 nm | 1.25 mJ | 0.6 mJ | 2 mJ | 5 mJ | 6 mJ |
| 266 nm | 0.6 mJ | 0.3 mJ | 1.5 mJ | 2.5 mJ | 3 mJ |
| 213 nm | 0.2 mJ | 0.06 mJ | 0.5 mJ | 1 mJ | 1.5 mJ |

OPTIONAL ATTENUATOR ¹⁰⁾

| | |
|-------------------|-------------------------|
| Wavelength | 1064 nm, 532 nm, 355 nm |
| Attenuation range | 5 – 95 % |

OPTIONAL FIBER COUPLED OUTPUT ¹¹⁾

| | |
|------------------------|----------------------------|
| Wavelength | 1064 nm or 532 nm |
| Max input pulse energy | up to 25 mJ ¹²⁾ |

DIMENSIONS

| | |
|------------------------------------|---------------------------------|
| Laser head (W×L×H) | 160 × 230 × 141 mm ³ |
| Harmonics generator module (W×L×H) | 113 × 242 × 112 mm ³ |
| Controller unit (W×L×H) | 160 × 70 × 140 mm ³ |
| Power adapter, typical (W×L×H) | 80 × 120 × 60 mm ³ |

OPERATING REQUIREMENTS

| | |
|----------------------|--|
| Cooling requirements | air cooled (no any water) |
| Ambient temperature | 15 – 30 °C |
| Relative humidity | 10 – 80 % (non-condensing) |
| Mains voltage | 90 – 230 V AC, single phase, 47 – 63 Hz ¹³⁾ |
| Power consumption | < 50 W < 100 W < 150 W |

¹⁾ Due to continuous improvements all specifications are subject to change. Unless stated otherwise all specifications are measured at 1064 nm and 100 Hz pulse repetition rate.

²⁾ FWHM level at 1064 nm. Shorter pulse duration is available by request. Please inquire for detailed specifications.

³⁾ Averaged from 30 second time interval.

⁴⁾ Over 8 hour period after 20 minutes of warm-up time, when ambient temperature variation is less than ±2 °C.

⁵⁾ Factory-set pulse repetition rate is fixed at max repetition rate shown in the table. Higher repetition rates are available, please inquire for more details.

⁶⁾ Full angle measured at the 1/e² level.

⁷⁾ Beam diameter is measured 20 cm from laser output at the 1/e² level.

⁸⁾ In respect to Q-switch triggering edge of pulse.

⁹⁾ Harmonics generator module is stand-alone unit optimized for specified output wavelength. Inquire for details if multiple wavelength output is needed.

¹⁰⁾ External Motorized Variable Attenuator. Please inquire for attenuator built-in into harmonics generator module.

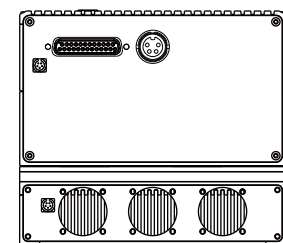
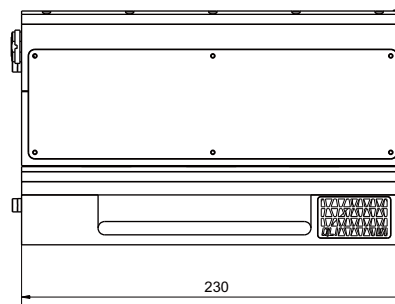
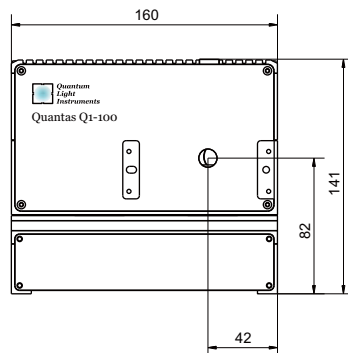
¹¹⁾ Fiber coupler is built-in into harmonics generator module. Please inquire for details.

¹²⁾ For fiber core diameter of 550 μm. Smaller core fibers are available, inquire for specifications.

¹³⁾ Laser can be powered from appropriate 28 V DC power source. Please inquire for details.



DRAWINGS



Laser head dimensions