

# Q-SHIFT-H20

Q-SHIFT is family of Q-switched lasers with build-in nonlinear wavelength conversion stage that allows to produce wavelengths that are not accessible with conventional solid-state lasers. Nd:YAG or Nd:YLF lasers these series are used as pump sources. High peak intensity pulses at visible wavelengths (blue, yellow and red) are provided when Q-SHIFT laser is combined with our attachable SHG or stand-alone H-SMART harmonic generator.

## FEATURES

- **1053 nm or 1551 nm** wavelength from **Nd:YLF** laser crystals respectively
- Up to **200 mJ** pulse energy
- Up to **4 W** average output power
- Up to **20 Hz** variable pulse repetition rate
- **Air cooled** (water-free)
- **4-6 ns** pulse duration
- **> 2 G shot lifetime** of pump diode
- **Built-in sync pulse generator** for triggering of user equipment
- Remote monitoring and control **via built-in Ethernet interface**

## OPTIONAL EQUIPMENT

Stand alone:

- H-SMART series stand-alone **2nd, 3rd, 4th or 5th harmonic generators**
- **Two-channel pulse generator** for triggering
- **Air-purging** unit for long lifetime of UV optics

Attachable:

- **2nd harmonic generator**, model SHG
- PC controlled **motorized attenuator** for fundamental wavelength beam
- **Beam guiding** module
- **Pulse energy monitor** with analog and/or digital output
- **Fiber coupled** output

## APPLICATIONS

- Light Detection And Ranging (LIDAR) (Metrology, Military, Astronomy and etc.),
- Spectroscopy (Laser Induced Breakdown (LIBS), Light Induced Fluoresce (LIFS), Flash photolysis and etc.)
- Laser ablation (marking, LCD repair, trimming, scribing and etc.),
- Medical (Ophthalmology, Dermatology, Photoacoustic spectroscopy (PAI) and etc.),
- Pulsed Laser Deposition (PLD).

## DIODE PUMPED HIGH ENERGY AIR-COOLED LASER



H-SMART harmonic generator



Attachable motorized attenuator and pulse energy monitor

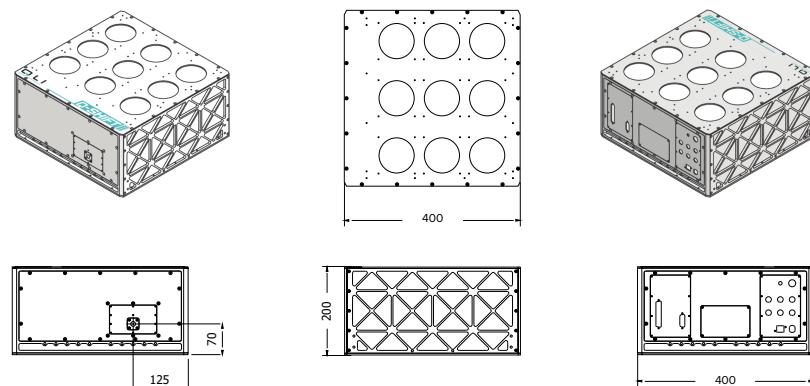


Laser head with attached 2nd harmonic generator SHG

# SPECIFICATIONS <sup>1)</sup>

MODEL <sup>2)</sup>	Q2HE-H20	Q-SHIFT-H20-W1551
Wavelength <sup>3)</sup>	1053 nm	1551 nm
Pulse repetition rate <sup>4)</sup>	20 Hz	20 Hz
Pulse energy	200 mJ	> 60 mJ
Pulse duration <sup>5)</sup>	< 6 ns	< 4 ns
Pulse energy stability <sup>6)</sup>	< 0.5 % RMS	< 3.5 % RMS
Linewidth	< 1 cm <sup>-1</sup>	< 8 cm <sup>-1</sup>
M <sup>2</sup> factor	< 2	< 10
Power drift <sup>7)</sup>		± 3.0 %
Beam profile	bell-shaped, > 75 % fit to Gaussian	
Beam divergence <sup>8)</sup>	< 1 mrad	< 6 mrad
Polarization	linear, > 95%	
Typical beam diameter <sup>9)</sup>	5.5 mm	7.0 mm
Jitter <sup>10)</sup>	< 0.5 ns RMS	
<b>Optional harmonics generator <sup>11)</sup></b>		
Pulse energy		
526.5/775.5 nm	100 mJ	-
351/517 nm	70 mJ	-
263/388 nm	30 mJ	-
211 nm	10 mJ	-
<b>Optional attenuator <sup>12)</sup></b>		
Transmission range	1 - 95 %	
<b>Operating requirements</b>		
Cooling requirements	air cooled	
Ambient temperature	15 - 30 °C	
Relative humidity (non condensing)	10 - 80 %	
Mains voltage <sup>13)</sup>	90-230 VAC, single phase, 47-63 Hz	
Average power consumption	120 W	250 W
<b>Dimensions (WxLxH) and Weight</b>		
Laser head	400 x 400 x 200 mm <sup>3</sup> - 20 kg	
19" Rack - CTA19	482 x 460 x 106.1 (91.4 - without feet) mm <sup>3</sup> - 10.7 kg	
Harmonics generator	188 x 244 x 141 mm <sup>3</sup> - 4-6 kg	

## DRAWINGS Q-SHIFT-H20



## 19" RACK - CTA19



**1)** Due to continuous improvements all specifications are subject to change. Unless stated otherwise, all specifications are measured at fundamental wavelength and maximum pulse repetition rate. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture.

**2)** xx in the model name sets laser repetition rate, for example Q-SHIFT-H20-W1551 laser will have factory-set 20 Hz pulse repetition rate.

**3)** Depend on pump laser wavelength.

**4)** Specify required pulse repetition rate when ordering, for example -H20 would mean laser with 20 Hz pulse repetition rate.

**5)** At FWHM level at fundamental wavelength, measured with 350 ps rise time photodiode.

**6)** Measured during 30 seconds operation after warm-up.

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

**8)** Full angle measured at the 4σ level.

**9)** Beam diameter is measured 20 cm from laser output at the 4σ level.

**10)** In respect to falling edge of pump diode triggering pulse.

**11)** Q-SHIFT is compatible with our attachable second harmonic generator (model SHG) and stand-alone H-SMART harmonics generator. Pulse energies presented here are maximum values. Please refer to harmonic generator datasheet for detailed specifications.

**12)** Motorized attenuator intended to be attached to the laser housing. Transmission can be changed remotely through laser web-server control interface.

**13)** Laser can be powered from appropriate 12 or 28 VDC power source. Please inquire for details.