

# VisUV **NEW**

## Picosecond Lasers in UV, Green, Yellow, and Orange

- Enhanced power values at 280 and 295 nm
- UV wavelengths 266, 280, 295, 355 nm
- Vis wavelengths 532, 560, 590 nm
- Pulse width < 85 ps (FWHM)
- Repetition rate from single shot up to 80 MHz, external or internal triggering
- Collimated output, optional fiber coupling

### Applications

- Time-resolved fluorescence spectroscopy/microscopy (FLIM, FRET, FCS)
- Stimulated Emission Depletion Microscopy (STED)
- Biochemical analytics
- Diffuse Optical Tomography (DOT)
- Quantum optics
- LIDAR, Ranging
- 3D polymerization



The VisUV laser is a versatile and flexible platform based on a Master Oscillator Fiber Amplifier (MOFA) concept with frequency conversion. The master oscillator generates infrared picosecond pulses at 1064 nm with variable repetition rates up to 80 MHz using the proven gain-switching techniques from PicoQuant. The output of this seed laser is directly connected to a multi-stage fiber amplifier, which boosts the output from the seed laser by several dB while maintaining the other characteristics of the seed laser beam like the emission wavelength, polarization and the pulse width.

#### Flexible wavelength configuration

The high pulse energies of the amplified 1064 nm infrared laser permit efficient wavelength conversions using second, third, and fourth harmonic generation (SHG, THG, FHG). In that way it is possible to generate picosecond pulses at 532, 355, and 266 nm with average optical power values of more than 750, 10 and 2 mW respectively.

While any wavelength is available individually, 266, 355 and 532 nm can also be offered in combination of two or three wavelengths. Each wavelength is emitted from a separate beam output equipped with an individual shutter.

#### Excellent beam quality

The VisUV features nearly perfectly circular and gaussian shaped beam profiles (TEM00) which can be specified as a value of  $M^2 < 1.1$  and  $M^2 < 1.2$  at 532 nm and 355 nm, respectively.

#### Compact stand alone device

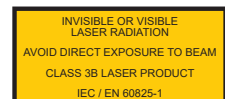
The VisUV is a stand alone device with a special design optimized for maximum heat dissipation. It includes all driving functions of the established PDL series laser driver such as choice of repetition rate and trigger source. An optional remote control for the VisUV allows to set the trigger source, the repetition rate, and the general output power of the laser.

# Specifications

<b>NEW 280 nm / 295 nm</b>		
<b>VisUV 280-560</b>		
Center wavelength*	280 ± 1 nm	561 ± 1 nm
Maximum average output power	> 1 mW	> 150 mW
Pulse width (FWHM)	< 85 ps	
Spectral width	<< 1 nm	
Output	collimated beam**	collimated beam
Divergence	< 2 mrad	< 0.5 mrad
Beam diameter	1.0 ± 0.2 mm	2.1 ± 0.2 mm
Beam quality	M <sup>2</sup> < 1.1 (vertical), M <sup>2</sup> < 1.5 (horizontal)	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
Max time delay between outputs	< 1 ns	
PER	> 1:300 (> 25 dB)	
<b>VisUV 295-590</b>		
Center wavelength*	295 ± 1 nm	589 ± 1 nm
Maximum average output power	> 0.5 mW	> 60 mW
Pulse width (FWHM)	< 85 ps	
Spectral width	<< 1 nm	
Output	collimated beam**	collimated beam
Divergence	< 2 mrad	< 0.5 mrad
Beam diameter	1.0 mm ± 0.2 mm	1.5 mm ± 0.2 mm
Beam quality	M <sup>2</sup> < 1.1 (vertical), M <sup>2</sup> < 1.5 (horizontal)	M <sup>2</sup> < 1.1 (typ.~ 1.02), TEM <sub>00</sub>
Max time delay between outputs	< 1 ns	
PER	> 1:300 (> 25 dB)	

\* 2-beam output modules

\*\* limited collimation range, possible low power version with enhanced beam quality



These tables are updated on a regular basis based on data of recently manufactured laser heads. Other specifications such as shorter pulse widths or higher powers than listed might be possible depending on the performance of diodes on stock. Please contact us for more information. All measurements shown may be subject to a 10 % calibration error. Each laser head undergoes an extensive burn-in test to ensure long-term stability and is shipped with a comprehensive set of test data. This test data is kept in our database, which already holds records of more than 18 years.

<b>Multicolor module</b>			
	<b>VisUV-266-355-532</b>		
Center wavelength	266 ± 1 nm	355 ± 1 nm	532 ± 2 nm
Maximum average output power	> 2 mW	> 5 mW	> 250 mW
Pulse width (FWHM)	< 85 ps		
Spectral width	<< 1 nm		
Output	collimated beam*	collimated beam	collimated beam
Divergence	< 2 mrad	< 0.5 mrad	< 0.5 mrad
Beam diameter	1.0 ± 0.2 mm	1.5 ± 0.2 mm	2.1 ± 0.2 mm
Beam quality	M <sup>2</sup> < 1.1 (vertical) M <sup>2</sup> < 1.5 (horizontal)	M <sup>2</sup> < 1.2 (typ. ~ 1.1), TEM <sub>00</sub>	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
PER	> 1:300 (> 25 dB)		

\* limited collimation range, possible low power version with enhanced beam quality  
Two output wavelengths in any combination on request.

<b>Single color and high power modules</b>				
	<b>VisUV-266</b>	<b>VisUV-355</b>	<b>VisUV-532</b>	<b>VisUV-532-HP</b>
Center wavelength	266 ± 1 nm	355 ± 1 nm	532 ± 2 nm	532 ± 2 nm
Maximum average output power	> 2 mW	> 10 mW	> 300 mW	> 750 mW
Pulse width (FWHM)	< 85 ps	< 85 ps	< 85 ps	< 1 ns
Spectral width	<< 1 nm			
Output	collimated beam*	collimated beam	collimated beam	collimated beam
Divergence	< 2 mrad	< 0.5 mrad	< 0.5 mrad	< 0.5 mrad
Beam diameter	1.0 ± 0.2 mm	1.5 ± 0.2 mm	2.1 ± 0.2 mm	2.1 ± 0.2 mm
Beam quality	M <sup>2</sup> < 1.1 (vertical) M <sup>2</sup> < 1.5 (horizontal)	M <sup>2</sup> < 1.2 (typ. ~ 1.1), TEM <sub>00</sub>	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
Max time delay between outputs	< 1 ns			
PER	> 1:300 (> 25 dB)			

\* limited collimation range, possible low power version with enhanced beam quality

# General Specifications

(valid for all wavelengths)

<b>Repetition rates</b>	
<i>Internal</i>	
Range	user selectable: 80, 40, 20, 10, 5 or 2.5 MHz (80 MHz base frequency) 1000, 500, 250, 125, 62.5 or 31.25 kHz (1 MHz base frequency)
<i>External via NIM input</i>	
Range	< 1 Hz to 80 MHz
Trigger level	fixed trigger level at - 400 mV
Connector	NIM-CAMAC
<i>External via TTL input</i>	
Range	< 1 Hz to 80 MHz
Amplitude	- 5 to + 5 V (maximum limits)
Trigger level	adjustable between -1 and +1 V
Connector	BNC
<b>Synchronization output</b>	
Amplitude	< - 800 mV into 50 Ohms (NIM)
Connector	SMA
<b>Delays</b>	
Trigger in (NIM) to sync out	typ. $9 \pm 1$ ns
Trigger in (NIM) to optical out	typ. 80 ns
Sync out to optical out	typ. 70 ns
For multiple optical outputs: Max time delay between different output pulses	< 1 ns
<b>Dimensions</b>	
Size (l × w × h)	352 × 336 × 82.5 mm
Weight	ca. 9 kg
<b>Operation</b>	
Temperature range	10-35 °C
Maximum power consumption	115 W
Power stability (12 hours) ( $\Delta T$ (ambient) < 0.5 K)	< 3 % rms

\* lower max. repetition rate for HP version (see Specifications)



PicoQuant GmbH  
Rudower Chaussee 29 (IGZ)  
12489 Berlin  
Germany

Phone +49-(0)30-1208820-0  
Telefax +49-(0)30-1208820-90  
Email [info@picoquant.com](mailto:info@picoquant.com)  
Web [www.picoquant.com](http://www.picoquant.com)