

VisUV

Picosecond Laser 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.

Flexible repetition rate

The VisUV can be operated at 12 different internally selectable repetition rates between 31.25 kHz and 80 MHz and can also be triggered externally by TTL or NIM signals at any repetition rate between single shot and 80 MHz.

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.

Wavelength

Type (VisUV-)	Wavelength [nm]	Pulse (FWHM) [ps]	Max avg. power [mW]	Divergence [mrad]	Beam diameter [mm]	Beam quality
Multicolor modules						
266-355-532	266 (± 1) ¹	< 85	> 2.0	< 2	1.0 ± 0.2	M ² < 1.1 (vertical) M ² < 1.5 (horizontal)
	355 (± 1)		> 5.0	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
	532 (± 2)		> 250	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
266-355-532-MIC	266 (± 1)	< 85	> 1.0	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
	355 (± 1)		> 5.0	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
	532 (± 2)		> 250	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
280-560	280 (± 1) ¹	< 85	> 1.0	< 2	1.0 ± 0.2	M ² < 1.1 (vertical) M ² < 1.5 (horizontal)
	561 (± 1)		> 150	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
280-560-MIC	280 (± 1)	< 85	> 0.3	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
	561 (± 1)		> 150	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
295-590	295 (± 1) ¹	< 85	> 0.5	< 2	1.0 ± 0.2	M ² < 1.1 (vertical) M ² < 1.5 (horizontal)
	589 (± 1)		> 60	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
295-590-MIC	295 (± 1)	< 85	> 0.1	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
	589 (± 1)		> 60	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
Single color modules						
266	266 (± 1) ¹	< 85	> 2.0	< 2	1.0 ± 0.2	M ² < 1.1 (vertical) M ² < 1.5 (horizontal)
266-MIC	266 (± 1)	< 85	> 1.0	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
355	355 (± 1)	< 85	> 10	< 0.5	1.5 ± 0.2	M ² < 1.2 (typ. ~ 1.1), TEM ₀₀
532	532 (± 2)	< 85	> 300	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀
532-HP	532 (± 2)	< 1000	> 750	< 0.5	2.1 ± 0.2	M ² < 1.1 (typ. ~ 1.02), TEM ₀₀

¹ Limited collimation range. Improved beam quality with low power is available in the MIC versions.



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.

Specifications

Optical output	
Available wavelength	266 to 590 nm
Spectral width	<< 1 nm
Polarization Extinction Ratio (PER)	> 1:300 (> 25 dB)
Power stability (12 hours) (ΔT (ambient) < 0.5 K)	< 3 % rms
Other optical specs (power, pulse, beam shape)	see wavelengths
Repetition rates	
<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
Synchronization output	
Amplitude	< - 800 mV into 50 Ohms (NIM)
Connector	SMA
Delays	
Trigger in (NIM) to sync out	typ. 9 ± 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
Dimensions	
Size (l × w × h)	352 × 336 × 82.5 mm
Weight	ca. 9 kg
Operation	
Temperature range	10-35 °C
Maximum power consumption	115 W



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
Web www.picoquant.com