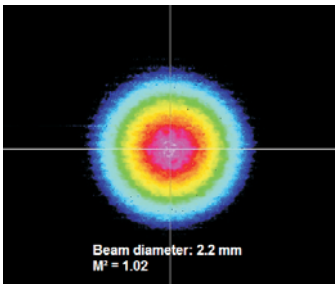


NEW

VisIR-765 "STED"



Versatile Picosecond Laser Module



Beam profile VisIR-765 "STED"

- Center emission wavelength 766 nm
- Pulse width typically 0.5 ns (FWHM), short pulse widths down to 70 ps available on demand
- Maximum average output power 1400 mW
- Repetition rates from single shot up to 80 MHz, external or internal triggering
- Collimated output



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 picosecond pulsed laser VisIR-765 "STED" is based on a Master Oscillator Fiber Amplifier (MOFA) concept with frequency conversion. The master oscillator generates infrared picosecond pulses at 1530 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.

Average output power of 1.4 W

The high pulse energies of the amplified 1530 nm infrared laser permit an efficient wavelength conversion using single pass second harmonic generation (SHG). In that way it is possible to generate picosecond pulses at 766 nm with an average power of 1.4 W. The VisIR-765 „STED“ 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. This feature is extremely useful for a perfect synchronization of excitation and depletion laser in a stimulated emission depletion (STED) set-up.

Pulse width optimized for STED

The pulse width is specially extended to about a half nanosecond (FWHM). Such pulse lengths are found to be ideal for STED microscopy since longer pulses or even continuous-wave excitation can expose the sample to an unnecessary amount of radiation that can lead to increased photobleaching.

Excellent beam quality

The VisIR-765 "STED" features a nearly perfectly circular and gaussian shaped beam profile (TEM_{00}) which can be specified as a value of $M^2 < 1.1$, with a typical figure of about $M^2 \sim 1.02$. That is an important parameter for further accurate beam shaping (e.g. "STED donut").

Compact stand alone device

The VisIR-765 "STED" 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 VisIR-765 "STED" allows to set the trigger source, the repetition rate, and the general output power of the laser.

Specifications

VisIR-765 "STED"	
Optical output	
Center wavelength.....	766 ± 3 nm
Maximum average output power.....	< 1.4 W
Pulse width (FWHM).....	typically 0.5 ns*
Spectral width.....	< 0.5 nm
Output.....	collimated beam
Beam diameter.....	2.2 mm ± 0.2 mm
Beam quality.....	$M^2 < 1.1$ (typical ~ 1.02), TEM_{00}
PER.....	> 30 dB
Power stability (12 hours, $\Delta T_{ambient} < 0.5 K$).....	< 3 % rms
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 V to + 5 V (maximum limits)
Trigger level.....	adjustable between -1 V and +1 V
Connector.....	BNC
Synchronization output	
Amplitude.....	< -800 mV into 50 Ohms (NIM)
Connector.....	SMA
Dimensions	
Size (l × w × h).....	352 × 336 × 82.5 mm
Weight.....	7.5 kg
Operation	
Temperature range.....	10 °C - 30 °C
Maximum power consumption.....	115 W
*short pulse widths below 70 ps available on demand	



Please check our webpage for updated information.

All Information given here is reliable to our best knowledge. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications and external appearances are subject to change without notice. Trademarks or corporate names are used for explanation and identification, to the owner's benefit and without intent to infringe.

© PicoQuant GmbH, December 2015



PicoQuant GmbH
Rudower Chaussee 29 (IGZ)
12489 Berlin
Germany

Phone +49-(0)30-6392-6929
Telefax +49-(0)30-6392-6561
Email info@picoquant.com
WWW http://www.picoquant.com