

Prima

3-Color Gain-Switched Picosecond Laser

- **NEW** Three Colors can be selected at visible wavelength 405, 450, 488, 515, 640 nm
- Compact, stand-alone, affordable
- Pulsed and CW operation, fast CW switching
- Suitable for measuring fluorescence lifetime (ns) and photoluminescence lifetime (μ s-ms)
- Triggerable internally and externally, up to 200 MHz
- Fully computer controlled
- SM-PM fiber-coupling is available for combination 450, 515, 640 nm with 35% coupling efficiency



Applications

- Material science and chemical research
- Life science
- Photoluminescence and fluorescence lifetime measurements
- Quantum yield measurements
- Time-resolved microscopy and single molecule detection (FLIM, FRET, PIE-FRET, FCS)

Prima offers full flexibility, enabling you to perform time-resolved or steady-state measurements at 3 visible wavelengths. Fast CW switching is a smart solution for measuring longer lifetimes in the μ s to ms range. It is especially efficient for materials with a poor luminescence quantum yield. The pulsed mode can be driven either internally at selected repetition rates between 1 kHz and 200 MHz or externally, from single shot up to 200 MHz. Moreover, you can combine Prima with other laser diode heads to create even more sophisticated excitation patterns, such as Burst, Pulse Interleaved Excitation (PIE), or Alternative Laser Excitation (ALEX).

Specifications

Optical output					
Available wavelengths ¹ [nm]	405	450	488	515	640
Max. pulsed power ² [mW]	10	10	10	10	10
Pulse duration [ps]	< 130	< 130	< 150	< 170	< 100
Max. cw power [mW]	50	50	50	50	50
Beam dimension ³ [mm]	1.0 \pm 0.30				
Beam circularity	typ. > 0.5	typ. > 0.3	typ. > 0.3	typ. > 0.3	typ. > 0.5

Polarization	linear, orientation indicated via label				
Polarization Extinction Ratio (PER)	typ. > 30:1 (> 15 dB)				
Spectral width FWHM (pulsed) [nm]	< 3	< 4	< 4	< 6	< 2
Spectral width FWHM (CW) [nm]	< 2	< 2	< 2	< 3	< 2
Repetition rates					
Internal					
Range	User selectable 1 kHz to 200 MHz 1000 increments of 1 kHz from 1 to 999 kHz 200 increments of 1 MHz from 1 to 200 MHz				
External					
Range	0 Hz to 200 MHz				
Trigger level	-1V ... +1V into 50 Ohm				
Trigger voltage	-3V to +5V into 50 Ohm				
Timing Jitter	< 12 ps (rms)				
Connector	SMA				
Synchronization output					
Amplitude	< -800 mV into 50 Ohm (NIM)				
Connector	SMA				
Gating					
Rise/Fall Time	< 3 ns				
ON Time Gate	freely adjustable from < 10 ns to 1 ms				
OFF Time Gate (as a factor of ON Time Gate)	freely adjustable from 1 to 255				
Impedance	10 kOhms with pull-up 50 Ohms with pull-down				
Connector	SMA				
Dimensions					
Size (h × w × l)	75 × 83 × 140 mm				
Weight	approx. 1 kg				
Operation					
Temperature range	10 to 35 °C				
Rel. humidity	< 80 % (non condensing)				
Maximum power consumption	< 30 W				
Interface					
PC interface	USB 2.0				
Connector	USB-C				
Operating system	Windows™ 10 and 11				

¹ Typical value in cw mode ± 10nm. A slight shift to shorter wavelength in ps mode possible.

² This is the maximum average power at maximum intensity setting and max repetition rate.

A pulse broadening up to 500 ps FWHM is possible at maximum intensity setting.

³ Measured at 1 m distance from laser aperture



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