

PLS Series

Sub-nanosecond Pulsed LEDs for PDL 800-B/-D/828

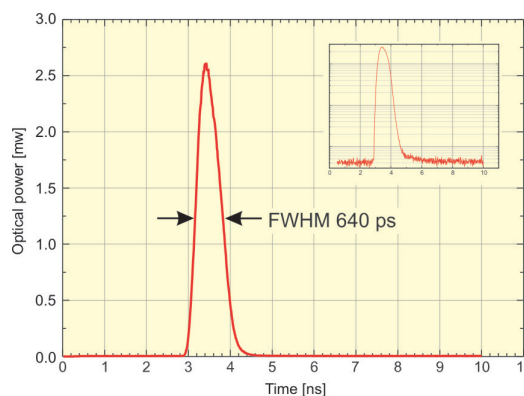
- Wavelengths from 255 to 600 nm
- Peak power up to 2.5 mW
- Pulse widths as short as 600 ps (FWHM)
- Repetition rates from single shot to 40 MHz
- Optional bandpass filter



Applications

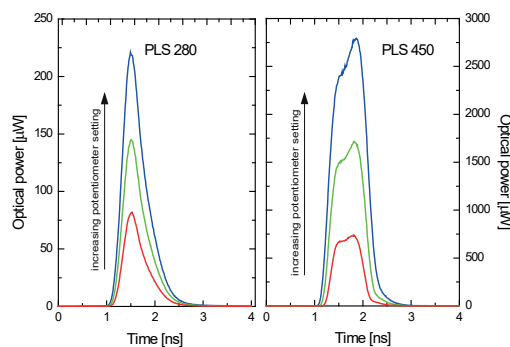
- Time-resolved fluorescence spectroscopy
- Biochemical analysis
- Detection of molecules labeled with perylene, coumarin, fluorescein and rhodamine dyes
- Intrinsic protein fluorescence from tryptophan or tyrosine
- Testing of optoelectronic devices such as pin-diodes and PMTs

The PLS Series are the fastest miniature sub-nanosecond pulsed LED sources available. They combine short pulse widths (down to 600 ps FWHM) with high repetition rates (from single shot up to 40 MHz, depending on wavelength) in a compact and maintenance free set-up. They are interchangeable plug-in heads for the PDL Series drivers and provide an ideal excitation source to replace flash lamps or Argon-ion lasers for fluorescence lifetime measurements. Their spectral and timing characteristics are also particularly suitable for biomedical applications, e.g. for the detection of labeled substances as well as naturally fluorescent amino acids like tryptophan or tyrosine. With a combination of interchangeable PLS Series heads, the demand for a compact and affordable excitation source that covers a wide range of wavelengths is satisfied.



The system consists of a pulsed laser driver of the PDL Series (PDL 800-D, PDL 828 "Sepia II") and interchangeable LED heads. LED heads with center wavelengths between 255 and 600 nm are available and can be provided with optional spectral bandpass filters to excite samples with a narrow spectral range.

The pulse width and power level can be fine-tuned with the adjustable power level control of the PDL Series drivers, to tailor the pulse shape and power level to the application requirements. The laser drivers of the PDL Series feature easy to use controls either by means of a potentiometer on the front panel or by a setting in the control software (PDL 828).



Specifications

| PLS with max. repetition rate of 10 MHz | | | | | | |
|---|-------------------------|------------------------|---------------------------|------------------------------------|----------------|-----------------------|
| Type | Wavelength (± 10 nm) | Average power @ 10 MHz | | | Spectral width | Pulse width (typ.) |
| | | without filter | with colored glass filter | with band-pass filter ⁴ | | |
| PLS 255 | 255 nm | - | - | 1.0 µW | < 20 nm | 800 ps |
| PLS 265 | 265 nm | - | - | 1.0 µW | < 20 nm | 700 ps |
| PLS 270 | 275 nm | - | - | 2.0 µW | < 20 nm | 650 ps |
| PLS 280 ¹ | 285 nm | - | 1.0 µW | 2.0 µW | < 20 nm | 900 ps |
| PLS 300 ¹ | 295 nm | - | 1.0 µW | 2.0 µW | < 20 nm | 900 ps |
| PLS 310 ¹ | 315 nm | - | 0.6 µW | 1.0 µW | < 15 nm | 800 ps |
| PLS 320 ¹ | 325 nm | - | 0.5 µW | 0.8 µW | < 15 nm | 800 ps |
| PLS 340 ² | 340 nm | 1.0 µW | - | - | < 10 nm | 800 ps |
| PLS 575 ² | 575 nm | 3.0 µW | - | - | < 20 nm | < 1.3 ns |

An internal security circuit prevents any damage if the these LEDs (PLS 255 to PLS 340 and PLS 575) are operated above 10 MHz.

| PLS with max. repetition rate of 40 MHz | | | | | | |
|---|-------------------------|------------------------|------------------------------------|--------------------------|------------------------------------|-----------------------|
| Type | Wavelength (± 10 nm) | Average power @ 40 MHz | | Spectral width (approx.) | | Pulse width (typ.) |
| | | without filter | with band-pass filter ⁴ | without filter | with band-pass filter ⁴ | |
| PLS 370 ³ | 370 nm | - | 10 µW | - | 20 nm | 800 ps |
| PLS 400 ² | 400 nm | 50 µW | - | 20 nm | - | 800 ps |
| PLS 450 | 460 nm | 80 µW | 40 µW | 40 nm | 30 nm | 800 ps |
| PLS 600 | 600 nm | 20 µW | 12 µW | 20 nm | 18 nm | 950 ps |

Dimensions: 30 × 66 / 80.5 mm (Ø × length with lens / filter)

All PLS heads are supplied with an integrated lens.

¹ Supplied with a colored glass filter by default, a band-pass filter is available as an option for better performances.

² Emission is spectrally clean, no additional filter needed.

³ Always supplied with a bandpass filter.

⁴ Available as an option.



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