HPL SERIES

EDINBURGH INSTRUMENTS

High Repetition Rate / High Power Picosecond Pulsed Diode Lasers

The HPL high repetition rate / high power picosecond pulsed diode lasers are a series of pulsed sources designed for Time-Correlated Single Photon Counting (TCSPC) measurements with repetition rates up to 80 MHz.

When operating in standard pulse mode, HPL lasers provide pulses of <150 ps making them the ideal source for measuring short fluorescence lifetimes.

For experiments that require higher excitation energy, the high-power operation mode may be enabled. This mode offers average powers of a few mW whilst maintaining sub-nanosecond pulse widths.

HPL lasers are designed with Edinburgh Instruments spectrometers in mind and are directly mounted onto their standard laser couplings, but they are fully independent and do not need an external controller. This, together with their external trigger capability, makes them easily integrated into any experiment.

KEY FEATURES

- Repetition rates from 1 kHz up to 80 MHz
- Standard and high-power operation mode
- External trigger capability
- Spectrally purified output
- Compact plug-and-play design
- Extremely low RF radiation
- Optimised collimated beam
- Embedded drive electronics

SPECIFICATIONS

Model (HPL-)	405	420	445	450	475	485	510	635	655	670	785	800
Nominal Wavelength (±10 nm)	405	420	445	450	475	485	510	635	655	670	785	800
Linewidth (nm)	2.0±0.5	3.0±1.0	3.0±1.0	7.0±1.0	4.5±1.0	7.0±4.0	5.0±0.5	2.5±0.5	2.5±0.5	2.5±0.5	4.0±3.0	6.0±3.0
Maximum Repetition Rate (MHz)	80	80	80	80	80	80	80	80	80	80	80	80
Typical Pulse Width (ps) *	60	120	95	95	90	120	100	80	70	65	65	120
Typical Standard Average Power (mW) **	0.50	0.40	0.30	1.90	0.95	1.20	0.65	1.20	0.55	0.65	0.75	3.30
Typical High Average Power (mW) **	4.55	3.45	0.75	12.1	5.50	5.30	0.80	2.80	3.70	1.50	4.50	6.10
Typical Standard Peak Power (mW) **	110	90	100	200	150	150	100	250	200	130	110	300
Typical High Peak Power (mW) **	1500	800	280	1950	370	650	100	420	700	300	800	650

* In standard power mode.
** Measured at maximum repetition rate. Power may be increased by a factor of 1.1 – 4 (wavelength dependent) by removing the cleanup filter on the laser.

Repetition Rate	MHz: 80†, 40, 20, 10, 5, 2 kHz: 1000, 500, 200, 100, 50, 20, 10, 5, 2.5, 1† † Wavelength dependent
Bias Supply	15 Vdc +/- 5%, 15W (2.1mm DC jack)
Trigger Output	SMA, NIM Standard
Interlock Input	Hirose HR10A-7P-4P(73), (Link pin 1 and pin 2 to ground – interlock healthy)
Trigger Input	Hirose HR10A-7P-4P(73), (Signal pin 4 and ground pin 3)
Trigger Input Signal	TTL > 50 ns pulse. Trigger on rising edge. 0.0 V < Low level < 0.5 V, 2.5 V < High level < 5 V
Key Switch	Yes
Beam Quality	10% - 90% Knife Edge Method Beam diameter < 9.5 mm at HPL output aperture Beam diameter < 25 mm after 250 mm propagation
Spectral Conditioning	Built-in filter to minimise out-of-band emission (no external spectral filtering needed)
Physical Dimensions	Overall: 168 mm length x 64 mm x 64 mm Collimator tube: ø 30 mm x 38 mm
Tapped Holes for Stud Mount	2 x M6
Weight	750 g

Other wavelengths available upon request.

CLASS 3B LASER PRODUCT

Avoid exposure to beam. Light emitted by the source may be harmful to the human eye and to skin. Please obey laser safety regulations.
This product complies with the US federal laser product performance standards.

Customer support is available worldwide.
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