

HPL SERIES



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 <math><150\text{ ps}</math> 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 \pm 0.5 | 3.0 \pm 1.0 | 3.0 \pm 1.0 | 7.0 \pm 1.0 | 4.5 \pm 1.0 | 7.0 \pm 4.0 | 5.0 \pm 0.5 | 2.5 \pm 0.5 | 2.5 \pm 0.5 | 2.5 \pm 0.5 | 4.0 \pm 3.0 | 6.0 \pm 3.0 |
| Maximum Repetition Rate (MHz) | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Typical Pulse Width (ps) * | 80 | 120 | 95 | 105 | 100 | 144 | 165 | 95 | 85 | 65 | 100 | 146 |
| Typical Standard Average Power (mW) ** | 0.45 | 0.76 | 0.30 | 0.92 | 0.50 | 0.37 | 1.20 | 0.50 | 0.50 | 0.65 | 0.30 | 4.30 |
| Typical High Average Power (mW) ** | 4.55 | 5.30 | 0.75 | 6.70 | 2.0 | 2.30 | 4.00 | 2.20 | 5.40 | 1.50 | 5.00 | 13.5 |
| Typical Standard Peak Power (mW) ** | 70 | 215 | 100 | 110 | 100 | 30 | 110 | 90 | 55 | 130 | 35 | 300 |

* 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: \varnothing 30 mm x 38 mm

TAPPED HOLES FOR STUD MOUNT

2 x M6

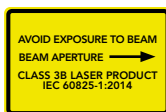
WEIGHT

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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All specifications are correct at the time of production. We reserve the right to change our specifications without notice.

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STG06 / 12.24