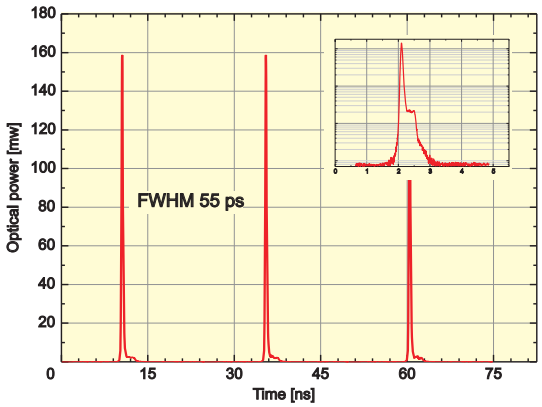
PDL 800-D

PicoQuant

Picosecond Pulsed Diode Laser Driver



- Pulsed and CW operation
- Easily selectable repetition rates from 31.25 kHz to 80 MHz
- Externally triggerable from single shot up to 80 MHz / sync output
- Laser pulse energy adjustable via driver unit
- Laser heads from 375 to 1990 nm, LED heads from 255 to 600 nm
- External trigger / sync output

Applications

- Time-resolved fluorescence spectroscopy
- Single molecule spectroscopy
- Test and measurement of detectors and optical fibers
- Diffuse Optical Tomography (DOT) of biological tissue
- Confocal microscopy (FLIM-, FRET-, FCS-imaging)
- Stimulated Emission Depletion (STED) microscopy
- Quantum optics, single photon generation
- Materials research

The PDL 800-D is a stand-alone driver for the picosecond pulsed laser diode heads from 375 to 1990 nm (LDH-P/D/FA Series) as well as for the sub-nanosecond pulsed LEDs from 255 to 600 nm (PLS Series). The laser heads can emit light pulses as short as 70 ps FWHM (50 ps on selection) at repetition rates from single shot up to 80 MHz with peak powers up to 1 Watt (depending on wavelength). The PDL 800-D features easy to use controls for repetition frequency and laser pulse energy. Continuous Wave (CW) operation is possible with the latest generation of laser heads, the LDH-D Series. Wavelengths can be changed quickly by simply plugging in a different laser or LED head.

The internal oscillator has two selectable base frequencies, 80 MHz and 1 MHz. Each base frequency can be further reduced by division through 1, 2, 4, 8, 16 and 32. The highest repetition frequency that can be derived is therefore 80 MHz, the lowest repetition rate is 31.25 kHz.

Laser pulses can also be triggered by an external trigger input so that the PDL 800-D can be synchronized with other instruments over the full frequency range. A sync output allows to trigger other components such as TCSPC electronics. Gating inputs allow to disable the laser output on two time scales through an external TTL-signal.

For multiple wavelengths experiments and automated systems, the computer controlled multichannel PDL 828 “Sepia II” is recommended.

Picosecond pulsed diode laser modules are also available in OEM quantities for system suppliers. These compact, cost-effective diode lasers with fixed parameters (repetition frequency, output power and wavelength) can easily be integrated into complex systems.

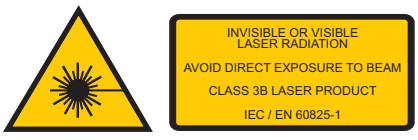
Pulsed Light Sources

LDH-P/D/FA Series
Picosecond pulsed laser diode heads

Available wavelengths: 375-510 nm, 530 nm and 635-1990 nm, pulsed and CW operation, options: peltier cooled, high power version, narrow spectral bandwith, selected short pulses, fiber coupling to singlemode and multimode optical fibers

PLS Series
Sub-nanosecond pulsed LEDs

Available wavelengths: 255-600 nm, options: spectral bandpass filter



Specifications

Internal oscillator

Type	crystal locked
Operation mode	pulsed or Continuous Wave (CW)
Base frequencies	80 MHz, 1 MHz (selectable)
Repetition frequencies	user selectable: 1, 1/2, 1/4, 1/8, 1/16 1/32 of base frequency: • 80, 40, 20, 10, 5 or 2.5 MHz • 1000, 500, 250, 125, 62.5 or 31.25 kHz

External trigger input

Amplitude	-5 to +5 V (maximum limits)
Trigger level (adjustable)	-1 to +1 V (negative slope)
Pulse width	> 5 ns
Frequency range	10 Hz to 80 MHz
Delay	35 ± 5 ns (from trigger input to optical output), jitter < 20 ps
Impedance	50 Ohms (dynamic) > 500 Ohms (static)
Connector type	BNC (female)

Synchronization output

Amplitude	< -800 mV into 50 Ohms (NIM)
Pulse width	6 ns
Delay	12 ns (from falling edge to laser output), jitter < 20 ps
Impedance	50 Ohms
Connector type	SMA (female)

Gating inputs

Slow gate	transition time < 1 ms (pulsed and CW)
Fast gate	transition time typ. 10 ns (pulsed only)

Remote interlock

Voltage	< 7 VDC
Loop resistance	10 Ohms max.

Power supply

Line voltage	220/240 or 110/120 VAC, 50/60 Hz
Power consumption	45 Watts max.

Dimensions

Driver unit	237 × 310 × 97 mm (w × d × h)

Temperature range . . . . . 10 - 40 °C

Please check our website for updated information.

For all available types and wavelengths please go to:
http://www.picoquant.com/products/category/picosecond-pulsed-sources

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