

PDL 800-D

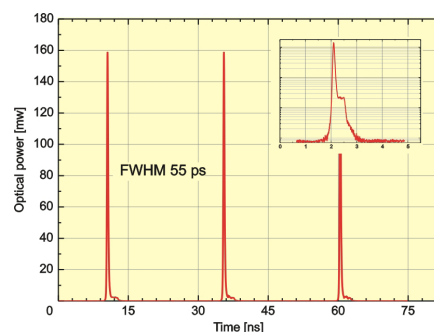
Picosecond Pulsed Diode Laser Driver

- 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 266 to 1990 nm, LED heads from 245 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 266 to 1990 nm (LDH-P/D/FA Series) as well as for the sub-nanosecond pulsed LEDs from 245 to 600 nm (PLS Series). The laser heads can emit light pulses as short as 40 ps FWHM at repetition rates from single shot up to 80 MHz with peak powers up to 100-200 Watts (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 versions 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.

Specifications

Internal oscillator	
Type	crystal locked (up to 80 MHz max.)
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: <ul style="list-style-type: none"> • 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), 50 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 < 100 ms (pulsed and CW)
Internal Impedance	> 500 Ohms
Connector Type	4-pin LEMO socket – 00.304 series, example of connector: FGG.00.304.CLA
Fast gate	transition time typ. 10 ns (pulsed only)
Internal Impedance	50 Ohms
Connector Type	1-pin LEMO socket – 00.250 series, example of connector: FFA.00.250.NTA
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



Pulsed Light Sources

LDH-P/D/FA Series

Picosecond pulsed laser diode heads



Available wavelengths: 266-1990 nm, pulsed and CW operation, peltier cooled, options: high power, narrow linewidth, short pulses, fiber coupling to singlemode and multimode optical fibers

PLS Series

Sub-nanosecond pulsed LEDs



Available wavelengths: 245-600 nm, options: spectral bandpass filter



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