

# LDH-FA Series

## Amplified Picosecond Pulsed Laser Diode Heads

- **NEW** 1 mW pulsed laser head at 595 nm
- Available wavelengths from 266 to 1560 nm
- Pulse width down to 70 ps (FWHM)
- Average output power up to 450 mW (depending on wavelength)
- Repetition rates up to 80 MHz
- Collimated beam or PM fiber output with FC/APC fiber connector



### Applications

- Time-resolved fluorescence spectroscopy/microscopy (FLIM, FRET, FCS)
- Stimulated Emission Depletion Microscopy (STED)
- Biochemical analytics
- Diffuse Optical Tomography (DOT)
- Quantum optics
- LIDAR, ranging
- 3D polymerization



The picosecond pulsed laser diode heads of the LDH-FA Series are based on a Master Oscillator Fiber Amplifier (MOFA) concept with optional frequency conversion.

The high pulse energies of the amplified infrared lasers permit an efficient wavelength conversion using, for example, Second Harmonic Generation (SHG), Third Harmonic Generation (THG) or even Fourth Harmonic Generation (FHG). In that way, it is for the first time possible to generate picosecond pulses at 266 nm, 355 nm, 515 nm, 531 nm, 560 nm, 595 nm, 766 nm, 775 nm, 1030 nm, 1062 nm, 1532 to 1560 nm with adjustable repetition rates up to 80 MHz and final pulse widths below 100 ps (FWHM).

All laser heads can be driven by the drivers of the PDL Series (PDL 828 "Sepia II" or PDL 800-D)

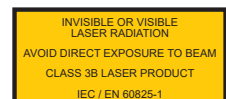
## Wavelengths

Wavelength [nm]	Type (LDH-)	Pulse (FWHM) [ps]	Average power <sup>1</sup> [mW]	Divergence [mrad]	Beam diameter [mm]	Beam quality
266 (± 1) <sup>2</sup>	P-FA-266	< 80 ps	> 1 mW	< 2	1.0 ± 0.2	M <sup>2</sup> < 1.1 (vertical) M <sup>2</sup> < 1.5 (horizontal)
355 (± 1)	P-FA-355	< 80 ps	> 5 mW	< 0.5	1.5 ± 0.2	M <sup>2</sup> < 1.2 (typ. ~ 1.1), TEM <sub>00</sub>
515 (± 1)	P-FA-515L	< 100 ps	> 20 mW	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
532 (± 1)	P-FA-530B	< 100 ps	> 4 mW	Polarisation maintaining fiber with FC/APC output connector		
532 (± 1)	D-FA-530L	< 100 ps	> 50 mW (pulsed emission) > 5 mW (cw emission)	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
532 (± 1)	P-FA-530XL	< 100 ps	> 200 mW	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
557 (± 3)	P-FA-560	< 80 ps	3 mW	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
596 (± 1)	P-FA-595B NEW	< 100 ps	1.0 mW	Polarisation maintaining fiber with FC/APC output connector		
766 (± 1)	P-FA-765B	< 100 ps	15 mW	Polarisation maintaining fiber with FC/APC output connector		
766 (± 1)	D-FA-765L	< 100 ps	> 40 mW (pulsed emission) > 3 mW (cw emission)	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
766 (± 1)	P-FA-765XL	< 100 ps	> 100 mW	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
775 (± 1) <sup>3</sup>	P-FA-775B	< 100 ps	15 mW	Polarisation maintaining fiber with FC/APC output connector		
775 (± 1) <sup>3</sup>	P-FA-775XL	< 100 ps	> 100 mW	< 0.5	2.1 ± 0.2	M <sup>2</sup> < 1.1 (typ. ~ 1.02), TEM <sub>00</sub>
1030 (± 3)	P-FA-1030	< 100 ps	> 50 mW	FC/APC fiber receptacle		
1063 (± 3)	P-FA-1060	< 100 ps	> 50 mW	FC/APC fiber receptacle		
1063 (± 3)	P-FA-1060XL	< 100 ps	< 450 mW	< 1.5	1.1 ± 0.1	M <sup>2</sup> < 1.3 TEM <sub>00</sub>
1532 to 1560 (± 3)	P-FA-1530	< 100 ps	> 50 mW	FC/APC fiber receptacle		
1532 to 1560 (± 3)	P-FA-1530XL	< 100 ps	< 450 mW	< 1.5	2.2 ± 0.2	M <sup>2</sup> < 1.1, TEM <sub>00</sub>

<sup>1</sup> At max repetition rate.

<sup>2</sup> Limited collimation range

<sup>3</sup> Any other wavelength between 765 and 780 nm can be realized on request (possible longer delivery time).



## Specifications

	Type (LDH-)	Value
Power stability (12 hours) ( $\Delta T$ (ambient) < 0.5 K)	all types	< 3 % rms
Polarization Extinction Ratio (PER)	P-FA-266/ 355/ 515L/ 530L/ 530XL/ 560/ 765XL/ 775XL	> 1:100 (> 20 dB)
	P-FA-530B/ 595B/ 765B/ 775B/ 1030/ 1060/ 1060XL/ 1530/ 1530XL	> 1:10 (> 10 dB)
Spectral width (nm)	all types	<< 1 nm
Dimension (l x w x h)	P-FA-530B/ 595B/ 765B/ 775B/ 1030/ 1060/ 1530	200 × 100 × 35 mm (without fiber)
	P-FA-515L/ 530L/ 530XL/ 1060XL/ 1530XL	214 × 74 × 100 mm
	P-FA-560/ 765L/ 765XL	223 × 74 × 100 mm
	P-FA-266/ 355	272.6 × 74 × 100 mm (incl. Clean-up filter)
Repetition rates	P-FA-530B/ 530L/ 595B/ 765B/ 765L/ 765XL/ 775B/ 775XL/ 1030/ 1060/ 1530	< 10 Hz to 80 MHz
	P-FA-266/ 355/ 515L/ 530XL/ 560/ 1060XL/ 1530XL	1 MHz to 80 MHz



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