NKT Photonics

PILAS DX

Picosecond pulsed diode lasers

VERSATILE PICOSECOND LASER DIODE MODULE

Ideal for continuous repetition rate tuning

The PILAS DX is designed for all industrial and scientific applications that require:

- continuous tuning of the repetition rate
- maintenance-free operation
- master or slave mode
- low cost of ownership

Applications

- Fiber testing
- Detector testing
- Fluorescence imaging
- Semiconductor inspection
- Time-resolved spectroscopy

PILAS DX

Get pulse-on-demand

PILAS DX operates from pulse-on-demand up to 40 MHz. The gain-switched operation of the semiconductor laser diode allows emission of optical pulses from 40 to 100 ps pulse width with ultra-low timing jitter (<3 ps rms).

Select master or slave operation

Its unique design allows operation in master or slave configurations to provide extreme flexibility to users. It can be triggered from an external source.

Choose your wavelength

Peak powers range from 20 to 400 mW in the wavelength range from 375 nm to 1550 nm, depending on the version. Choose from a wide range of wavelengths to match your specific need.

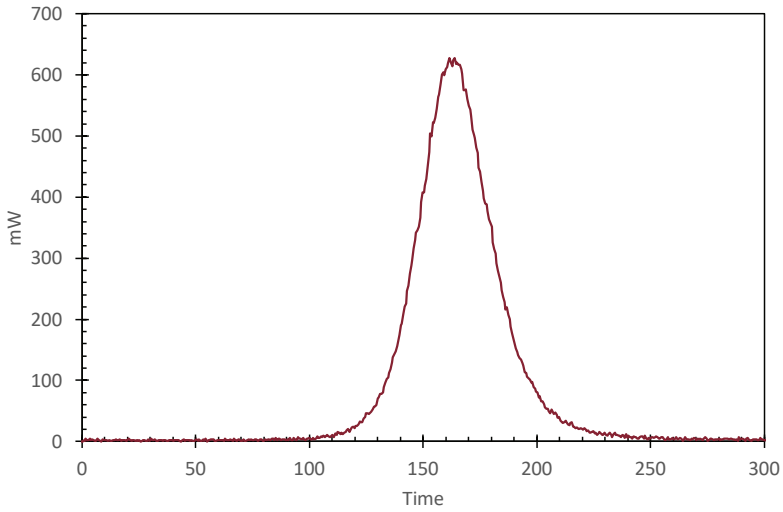
Get a robust and maintenance-free laser

The PILAS DX has been designed with maintenance-free 24/7 industrial operation in mind to eliminate down-time.

Features

- Wavelength range from 375 to 1550 nm
- Typical pulse width <60 ps
- From pulse-on-demand to 40 Mhz
- Ultra-low timing jitter <3 ps rms
- Continuously tunable repetition rate
- External triggering
- Master/slave operation
- Maintenance-free 24/7 operation

Pulse profile



SPECIFICATIONS

Available models and options

Model	Output	Wavelength	Spectral width	Pulse width	Peak power	Avg. power [1]	Max. repetition rate
PIL037-FS	Free space	375 ± 10 nm	< 5 nm	< 70 ps	> 150 mW	> 0.5 mW	40 MHz
PIL037-FC	FC/APC	375 ± 10 nm	< 5 nm	< 70 ps	> 60 mW	> 0.2 mW	40 MHz
PIL040-FS	Free space	405 ± 15 nm	< 5 nm	< 45 ps	> 400 mW	> 1.0 mW	40 MHz
PIL040-FC	FC/APC	405 ± 15 nm	< 5 nm	< 45 ps	> 160 mW	> 0.4 mW	40 MHz
PIL044-FS	Free space	440 ± 20 nm	< 5 nm	< 70 ps	> 250 mW	> 0.7 mW	40 MHz
PIL044-FC	FC/APC	440 ± 20 nm	< 5 nm	< 70 ps	> 100 mW	> 0.3 mW	40 MHz
PIL048-FS	Free space	480 ± 20 nm	< 10 nm	< 80 ps	> 150 mW	> 0.8 mW	40 MHz
PIL048-FC	FC/APC	480 ± 20 nm	< 10 nm	< 80 ps	> 60 mW	> 0.3 mW	40 MHz
PIL051-FS	Free space	510 ± 15 nm	< 10 nm	< 110 ps	> 100 mW	> 0.6 mW	40 MHz
PIL051-FC	FC/APC	510 ± 15 nm	< 10 nm	< 110 ps	> 40 mW	> 0.2 mW	40 MHz
PIL063-FS	Free space	635 ± 15 nm	< 7 nm	< 50 ps	> 200 mW	> 0.5 mW	40 MHz
PIL063-FC	FC/APC	635 ± 15 nm	< 7 nm	< 50 ps	> 80 mW	> 0.2 mW	40 MHz
PIL067-FS	Free space	665 ± 15 nm	< 7 nm	< 45 ps	> 200 mW	> 0.6 mW	40 MHz
PIL067-FC	FC/APC	665 ± 15 nm	< 7 nm	< 45 ps	> 80 mW	> 0.3 mW	40 MHz
PIL069-FS	Free space	690 ± 15 nm	< 7 nm	< 50 ps	> 200 mW	> 0.6 mW	40 MHz
PIL069-FC	FC/APC	690 ± 15 nm	< 7 nm	< 50 ps	> 80 mW	> 0.2 mW	40 MHz
PIL085-FS	Free space	850 ± 15 nm	< 10 nm	< 50 ps	> 200 mW	> 0.5 mW	40 MHz
PIL085-FC	FC/APC	850 ± 15 nm	< 10 nm	< 50 ps	> 80 mW	> 0.2 mW	40 MHz
PIL094-FS	Free space	940 ± 20 nm	< 15 nm	< 50 ps	> 200 mW	> 0.4 mW	40 MHz
PIL094-FC	FC/APC	940 ± 20 nm	< 15 nm	< 50 ps	> 80 mW	> 0.2 mW	40 MHz
PIL106-FS	Free space	1060 ± 20 nm	< 15 nm	< 50 ps	> 200 mW	> 0.4 mW	40 MHz
PIL106-FC	FC/APC	1060 ± 20 nm	< 15 nm	< 50 ps	> 80 mW	> 0.2 mW	40 MHz
PIL155-FS	Free-space	1555 ± 20 nm	< 15 nm	< 50 ps	> 40 mW	> 0.04 mW	40 MHz
PIL155-FC	FC/APC	1550 ± 20 nm	< 15 nm	< 50 ps	> 20 mW	> 0.02 mW	40 MHz

1) At maximum repetition rate

SPECIFICATIONS

Optical

Pulse repetition rate [MHz] [1]	Pulse-on-demand (0 to 40)
Frequency resolution [Hz]	1 @ 50 Hz
Beam quality, TEM_{00}	$M^2 < 1.2$
Polarization extinction ratio [dB]	> 20 (unpolarized fiber)
Timing jitter, rms [ps]	< 3

1) Pulse-on-demand with external trigger. Internal trigger >25 Hz.

Mechanical/Electrical/Environmental

Laser output	Free-space or single-mode fiber
Output fiber length [m]	1 m FC/APC
Warm-up time [min.]	< 10
Operation temperature [°C]	15 – 35
Storage temperature [°C]	-15 – 60
On/off cycles	> 10,000
Lifetime [hours]	> 10,000
Power supply requirements	12 VDC/3A or 100-264 VAC, 47-63 Hz
Power consumption [W]	< 30
Laser head dimensions (WxHxL) [mm^3]	95 x 31 x 181
Laser head weight [kg]	0.45
Control unit dimensions (WxHxL) [mm^3]	326 x 88 x 235
Control unit weight [kg]	2.5 kg
Laser system cooling	Air

Interface

Trigger in [1]	TTL or ± 5 V @ 50 Ω (BNC)
Trigger in delay [ns]	Free space: < 50 Fiber: < 60
Trigger out (synchronization)	+ 5 V @ 50 Ω (BNC)
Interlock	2.5 mm mono TS (jack connector)
External communication	USB 2.0 or RS-232

1) Pulse-on-demand with external trigger. Internal trigger >25 Hz.

Maintenance-free and reliable

You get a reliable pulse generation without any occasional pulse drop-out or Q-switching instabilities over the entire temperature and humidity range.

Our Plug and Play lasers are maintenance-free over the lifespan, designed to operate 24/7, allowing you to focus on your work.

TECHNICAL DRAWINGS