

PILAS DX

Picosecond pulsed diode lasers

- Wavelengths range from 375 to 1060 nm
- Pulse width typically <60ps
- From pulse-on-demand to 80 MHz
- Ultra low timing jitter (<3 ps rms)
- External laser triggering
- Continuously tunable repetition rate
- Maintenance-free 24/7 operation



With PILAS DX, you can have it your way. We have designed a versatile, picosecond laser diode module for all industrial and scientific applications that require:

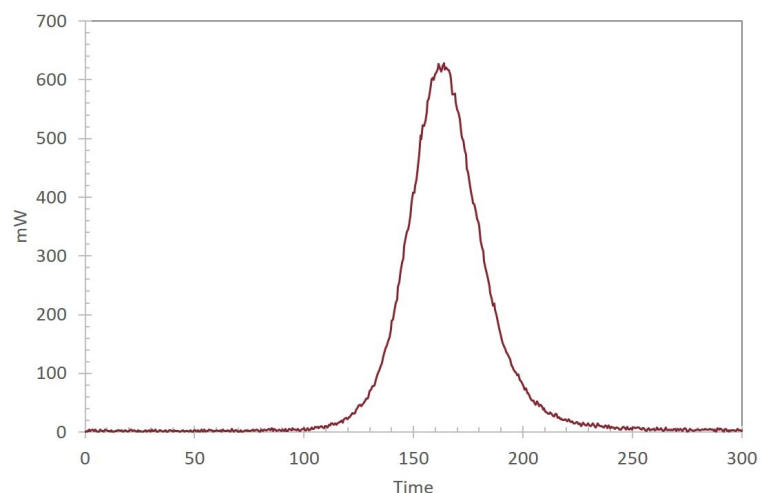
- continuous tuning of the repetition rate
- maintenance-free operation, no alignment required
- master or slave mode
- low cost of ownership

PILAS DX operates from pulse-on-demand up to 40 or 80 MHz in either master or slave mode, it can be easily triggered from an external source.

The gain-switched operation of the semiconductor laser diode allows emission of optical pulses from 45 to 110 ps pulse width with ultra low timing jitter (<3 ps rms).

Peak powers range from 40 to 400 mW in the wavelength range from 375 nm to 1060 nm, depending on the version you choose. You can choose from a wide range of wavelengths to match your specific need.

Pulse profile



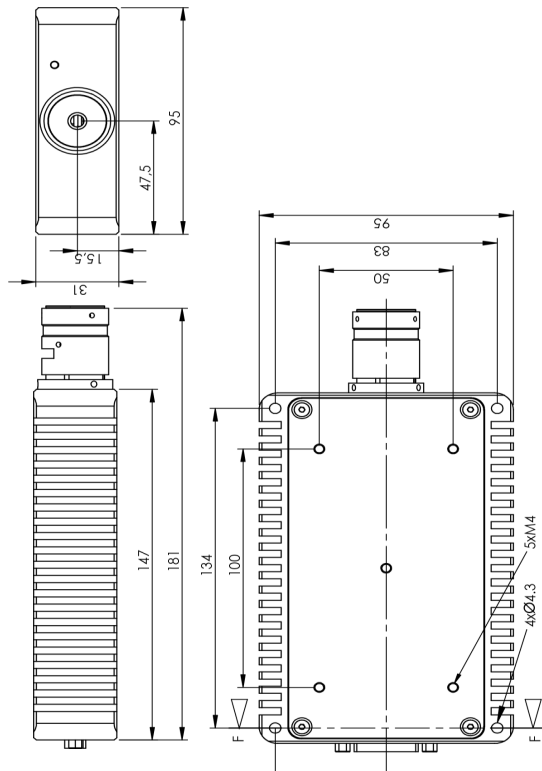
Applications

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

Available models and options

Buy off-the-shelf laser models as listed in the table below or request other wavelengths according to your needs.

Model	Output	Wavelength	Spectral width	Pulse width	Peak power	Avg. power (max. rep. rate)	Max. repetition rate
PiL037-FS	Free space	375 ± 10 nm	<5 nm	<45 ps	>400 mW	>0.6 mW >1.2 mW	40 MHz 80 MHz
PiL037-FC	FC/APC	375 ± 10 nm	<5 nm	<45 ps	>160 mW	>0.3 mW >0.5 mW	40 MHz 80 MHz
PiL040-FS	Free space	405 ± 15 nm	<5 nm	<45 ps	>400 mW	>1.0 mW >1.6 mW	40 MHz 80 MHz
PiL040-FC	FC/APC	405 ± 15 nm	<5 nm	<45 ps	>160 mW	>0.4 mW >0.6 mW	40 MHz 80 MHz
PiL044-FS	Free space	440 ± 20 nm	<5 nm	<70 ps	>250 mW	>0.7 mW >1.4 mW	40 MHz 80 MHz
PiL044-FC	FC/APC	440 ± 20 nm	<5 nm	<70 ps	>100 mW	>0.3 mW >0.5 mW	40 MHz 80 MHz
PiL048-FS	Free space	480 ± 20 nm	<10 nm	<80 ps	>150 mW	>0.8 mW >1.5 mW	40 MHz 80 MHz
PiL048-FC	FC/APC	480 ± 20 nm	<10 nm	<80 ps	>60 mW	>0.3 mW >0.6 mW	40 MHz 80 MHz
PiL051-FS	Free space	510 ± 15 nm	<10 nm	<110 ps	>100 mW	>0.6 mW >1.3 mW	40 MHz 80 MHz
PiL051-FC	FC/APC	510 ± 15 nm	<10 nm	<110 ps	>40 mW	>0.2 mW >0.5 mW	40 MHz 80 MHz
PiL063-FS	Free space	635 ± 15 nm	<7 nm	<70 ps	>200 mW	>0.8 mW >1.5 mW	40 MHz 80 MHz
PiL063-FC	FC/APC	635 ± 15 nm	<7 nm	<70 ps	>80 mW	>0.3 mW >0.6 mW	40 MHz 80 MHz
PiL067-FS	Free space	665 ± 15 nm	<7 nm	<45 ps	>200 mW	>0.6 mW > 1.3 mW	40 MHz 80 MHz
PiL067-FC	FC/APC	665 ± 15 nm	<7 nm	<45 ps	>80 mW	>0.3 mW >0.5 mW	40 MHz 80 MHz
PiL069-FS	Free space	690 ± 15 nm	<7 nm	<50 ps	>200 mW	>0.6 mW >1.2 mW	40 MHz 80 MHz
PiL069-FC	FC/APC	690 ± 15 nm	<7 nm	<50 ps	>80 mW	>0.2 mW >0.5 mW	40 MHz 80 MHz
PiL085-FS	Free space	850 ± 15 nm	<7 nm	<50 ps	>200 mW	>0.5 mW >0.9 mW	40 MHz 80 MHz
PiL085-FC	FC/APC	850 ± 15 nm	<7 nm	<50 ps	>80 mW	>0.2 mW >0.4 mW	40 MHz 80 MHz
PiL094-FS	Free space	940 ± 20 nm	<10 nm	<50 ps	>200 mW	>0.5 mW >0.9 mW	40 MHz 80 MHz
PiL094-FC	FC/APC	940 ± 20 nm	<10 nm	<50 ps	>80 mW	>0.2 mW >0.4 mW	40 MHz 80 MHz
PiL106-FS	Free space	1060 ± 20 nm	<10 nm	<50 ps	>200 mW	>0.5 mW >0.9 mW	40 MHz 80 MHz
PiL106-FC	FC/APC	1060 ± 20 nm	<10 nm	<50 ps	>80 mW	>0.2 mW >0.4 mW	40 MHz 80 MHz



Specifications

Optical

Pulse repetition rate	Pulse-on-demand (1 to 40 or 80 MHz)
Frequency resolution	1Hz @50Hz to 50kHz @80MHz
Beam quality	$M^2 < 1.2 \text{ TEM}_{00}$
Polarization extinction ratio	>20 dB (fiber is unpolarized)
Timing jitter	<3 ps rms
Laser output	Free-space or SM fiber (1m FC/APC)

Mechanical/Electrical

Size laser head	95 x 31 x 147 mm ³
Weight laser head	0.45 kg
Size stand-alone control unit	235 x 88 x 326 mm ³
Weight stand-alone control unit	2.5 kg
Power supply	12 VDC/3 A or 100-264 VAC, 47-63 Hz
Power consumption	<30 W
Laser system cooling	Air cooled

Interface

Trigger in ¹⁾	TTL or +/-5V @ 50Ω (BNC)
Trigger in delay	Free space <50 ns/ fiber <60 ns
Trigger out (synchronization)	+5 V @ 50 Ω (BNC)
Interlock	2.5mm mono TS (jack connector)
External communication	USB 2.0 or RS232

Environmental

Warm-up time	<10 minutes
Operation temperature	15 to 35 °C
Storage temperature	-15 to 60 °C
On/off cycles	>10,000
Life time	>10,000 hours

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

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 lasers are maintenance-free over the lifespan, allowing you to focus on your work.

They are Plug & Play and designed to operate 24/7.