

PEFL-KULT

PULSED ERBIUM FIBER LASER

1.5 μm ULTRA COMPACT LASER TRANSMITTER

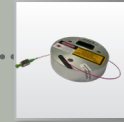


1.5 μm

PK 50A/ PK 50D



PK 2A



1.5 μm eye-safe operation
Energy per pulse up to 100 μJ

The PEFL-KULT series is a range of 1.5 μm pulsed fiber laser transmitters, delivering high peak power and high energy per pulse in ultra-compact modules with diffraction-limited output beam for range finding applications. A varied choice of models offers the possibility to operate over a wide range of operating setpoints (pulse duration, pulse repetition frequency and energy) allowing to be suitable for a various of high-accuracy systems. Compact pulsed laser transmitters are commonly used in applications such as ADAS, 3D scanning, mapping, telemetry, and also for supercontinuum generation.

The compact platforms allow an easy integration in highly integrated systems. The all-in-fiber design requires no maintenance. The PEFL-KULT has been tested under vibrations and shocks conditions in accordance with military standards (MIL-STD-810G, RTCA-DO-160G...) allowing operations in the harshest environmental conditions over a long period of time.

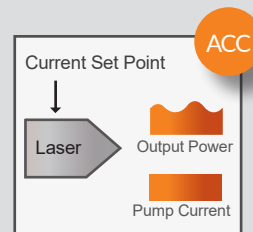
Lumibird electronic board designs offer a wide range of functionalities. The control of the PEFL-KULT can be analogic or digital. Platforms incorporate a microcontroller for internal controls, alarms, and RS232/USB communication making the laser compatible all systems. Pulses are triggered by an external signal supplied by the user system.

Solutions are also radiations proven, allowing spatial applications when the laser is equipped of Radhard erbium doped fiber.

More than 10 000 lasers have already deployed all over the world.

Modes of operation

The devices offer one mode of operation :



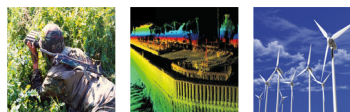
ACC (Automatic Current Control) mode is standard for all devices. The laser is controlled from diodes current set point.

Key features

- 1.5 μm eye-safe operation
- Energy per pulse up to 100 μJ
- Peak power up to 15 kW
- Pulse duration from 0.5 ns to 200 ns
- Pulse repetition frequency from 5 kHz to 2 MHz
- Continuous or burst operation
- Diffraction limited output beam
- Linear or random polarization
- Low power consumption
- Wide operating temperature range (-35 $^{\circ}\text{C}$ to +65 $^{\circ}\text{C}$)
- Compact and rugged package

What applications

- ADAS
- Telemetry, range-finding
- 3D scanning
- Mapping
- Cloud height measurement
- Wind sensing
- Supercontinuum generation



PEFL-KULT

PULSED ERBIUM FIBER LASER
1.5 μm ULTRA COMPACT LASER TRANSMITTER



Optical Specifications @ 25°C

PEFL-KULT	
Mode of operation	Pulsed
Operating wavelength	1545, 1550 nm ¹
Energy per pulse	Up to 100 μJ
Peak power	Up to 15 kW
Average power	Up to 2500 mW
Pulse repetition frequency	From 5 kHz to 2 MHz
Pulse duration (FWHM)	From 0.5 to 200 ns
Seed tap (Option)	1 m pigtail length, > 0.1mW peak power, SMF, FC/PC
Pigtail length	32 +/-2 cm
Fiber type	SMF – PANDA - LMA
Polarization	Random or linear
Beam quality, M ²	1.1 to 1.5
Output termination	FC/APC, ferule APC or Collimator

1 : Other wavelength on request

The PEFL-KULT is available as OEM module for an easy integration.

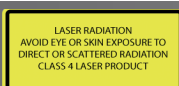
RELIABILITY

The Lumibird range of fiber laser are manufactured with tested components and are submitted to several inspections during the manufacturing process under a rigorous quality management certified in accordance with the ISO 9001:2015 standard. Our all-in-fiber systems offer maintenance-free operation. Countless units are continuously running in demanding environments with no failure.

GUARANTEE

Our fiber systems are under 1 full year parts and labor warranty.
We offer a warranty extension of 1 or 2 years. Please contact us.

For ordering information and custom solutions, please contact us : websales@keopsys.com



Lumibird undertakes a continuous and intensive product development program to ensure that its products perform to then highest technical standards. As a result, the specifications in this document are subject to change without notice.

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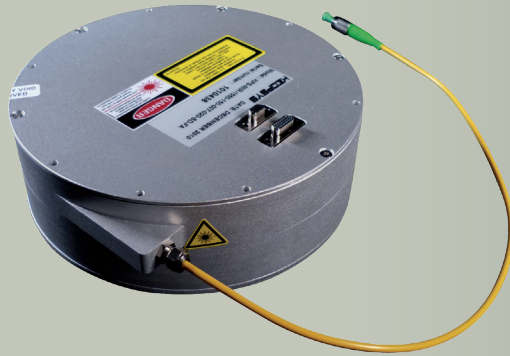
PEFL-MIRVISION

PULSED ERBIUM FIBER LASER

1.5 μm EYE-SAFE HIGH POWER LASER TRANSMITTER



1.5 μm



PM 2D / PM 3D

1.5 μm eye-safe operation,
Energy per pulse up to 350 μJ ,

...

The PEFL-MIRVISION series is a range of 1.5 μm pulsed fiber laser transmitters, delivering high peak power and high energy per pulse in compact modules for long-range applications.

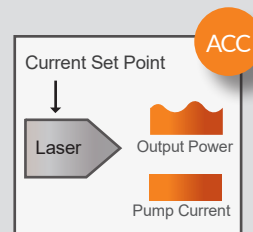
A varied choice of models offers the possibility to operate over a wide range of operating setpoints (pulse duration, pulse repetition frequency and energy) allowing to be suitable for a various of high-accuracy systems. Compact pulsed laser transmitters are commonly used in applications such as Airborne 3D scanning and mapping, telemetry, obstacle detection and supercontinuum generation.

The all-in-fiber design requires no maintenance. The PEFL-MIRVISION has been tested under vibrations and shocks conditions in accordance with military standards (MIL-STD-810G, RTCA-DO-160G...) allowing operations in the harshest environmental conditions over a long period of time.

Lumibird electronic board designs offer a wide range of functionalities. Platforms incorporate a microcontroller for internal controls, alarms, and RS232/USB communication making the laser compatible all systems. Pulses are triggered by an external signal supplied by the user system.

Modes of operation

The devices offer one mode of operation :



ACC (Automatic Current Control) mode is standard for all devices. The laser is controlled from diodes current set point.

Key features

- 1.5 μm eye-safe operation
- Energy per pulse up to 350 μJ
- Peak power up to 25 kW
- Choice of pulse duration from 0.5 ns to 200 ns
- Pulse repetition frequency from 15 kHz to 2 MHz
- Linear or random polarization
- High output-beam quality (from 1 to 2.5)
- Low power consumption
- Wide operating temperature range (-35 $^{\circ}\text{C}$ to +65 $^{\circ}\text{C}$)
- Rugged and compact package

What applications

- Telemetry, range-finding
- Obstacle detection
- Airborne survey, mapping
- 3D scanning
- Supercontinuum generation



PEFL-MIRVISION

PULSED ERBIUM FIBER LASER

1.5 μm EYE-SAFE HIGH POWER LASER TRANSMITTER



Optical Specifications @ 25 °C

PEFL-MIRVISION

PEFL-MIRVISION	
Mode of operation	Pulsed
Operating wavelength	1545 \pm 1 nm ¹
Wavelength excursion over T °C range	<0.3 nm
Energy per pulse	Up to 350 μJ
Peak power	Up to 25 kW
Average power	From 3 to 10 W
Pulse repetition frequency	From 15 kHz to 2 MHz
Pulse duration (FWHM)	From 0.5 to 200 ns
Random or Linear (15 dB) polarization	RP or LP
Output termination	FC/APC or Collimator
Seed tap (option)	1 m pigtail length, > 0.1mW peak power, SMF, FC/PC

1 : Other wavelength on request

The PEFL-MIRVISION lasers are available as OEM module for an easily integration

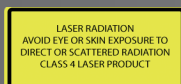
RELIABILITY

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PEFL-EOLA

PULSED ERBIUM FIBER LASER

1.5 μm LONG PULSE FIBER LASER



1.5 μm



PE 11A/ PE 12A

PE 13D

Eye-safe 1.5 μm operating wavelength,
Energy per pulse up to 400 μJ ,

...

The PEFL-EOLA series is a range of 1.5 μm pulsed fiber lasers specially designed for Doppler heterodyne LIDAR systems, delivering Fourier transform limited pulses with high energy and high peak power. Shorter pulse duration with high peak power are well suited to high spatial resolution middle range systems whereas longer pulses with high energy are well suited for long range applications.

Thanks to innovative optical designs, the lasers can emit up to 400 μJ energy and up to 900W peak power with a linear polarization, a very high extinction ratio in between two pulses, a long coherence length and an excellent output beam quality (diffraction limited or $M^2 < 1.1$ to 1.5 depending on peak power). This product range is ideal for various wind measurement applications such as turbine mounted lidar, windfarm optimization and wind hazard and wake vortices monitoring.

The rugged modules can work in the most stringent environments 24 hours/24. Lumibird provides numerous of PEFL-EOLA lasers which operates continuously under vibrations, shocks and strong temperature variations. IP64 solutions are also available.

The OEMs incorporate a microcontroller for internal controls, alarms, and RS232 communications making the laser compatible with all systems. Pulses are triggered by external signals (one TTL used as a gate, one analog used for pulse shaping) supplied by the user system. The lasers can be proposed with integrated pulse shaping electronics for easy integration into lidar systems or for pulse shape optimization. In this case, only one external TTL trigger signal is required.

An output circulator can be implemented into the module in order to collect the backscattered light for the Heterodyne measurement.

Key features

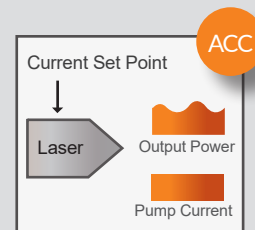
- Eye-safe 1.5 μm operating wavelength
- Energy per pulse up to 400 μJ
- Peak power up to 900 W
- Pulse duration from 100 to 800 ns
- Pulse repetition frequency from 10 kHz to 20 kHz
- Low RIN and low phase noise
- Linear Polarization
- Fourier transform limited linewidth operation
- Diffraction limited $M^2 < 1.1$ or < 1.5
- Wide operating temperature range from +10 $^{\circ}\text{C}$ to +65 $^{\circ}\text{C}$
- Highly integrated design

What applications

- Aerosol detection
- 2D/3D wind profiler
- Weather monitoring
- Pollution monitoring
- Turbine mounted LiDAR
- Wind hazard and wake vortices monitoring
- Wind farm optimization

Modes of operation

The devices offer one mode of operation :



ACC (Automatic Current Control) mode is standard for all devices. The laser is controlled from diodes current set point.

PEFL-EOLA

PULSED ERBIUM FIBER LASER

1.5 μm LONG PULSE FIBER LASER



Optical Specifications @ 25 °C

	PEFL-EOLA
Mode of operation	Pulsed
Operating wavelength	1550 +/-10 nm or ITU channel
Energy per pulse	Up to 400 μJ
Peak power	Up to 900 W
Pulse repetition frequency	From 10 to 20 kHz
Pulse duration	From 100 to 800 ns
Average output power	Up to 4 W
Spectral linewidth	From 3 kHz to <1 MHz
Polarization	Linear
Beam quality, M^2	<1.1 to < 1.5
CW seed tap	> 1 mW power on Panda, 100 +/-5 cm, 3 mm PVC
Tap and output termination	FC/APC

The PEFL-EOLA is available as OEM module for an easily integration

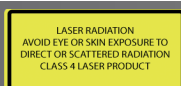
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