K2PHOTONICS

K2-1000-mini

Compact and powerful ultralow-noise laser

1 GHz repetition rate
High power operation
Ultrashort pulses
Dual-comb option

- Compact solution for spectrocopy
- High-power for nonlinear applications
- Ultra-low RIN and timing noise

DESCRIPTION

K2-1000-mini is a powerful ultralow noise turn-key laser for OEM integration. The laser is available as a modelocked femtosecond light source or as a dual-comb modelocked light source, producing two pulse trains from the same cavity. This laser is ideal for optical frequency comb applications, precision ranging, gas sensing, pump-probe as well as traditional laser oscillator applications, such as two-photon microscopy, amplifier seeding, and timing distribution.

CUSTOM OPTIONS

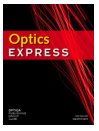
- Wavelength options (inquire)
- Fiber coupled output
- Lower power consumption option
- Broadband configuration

APPLICATIONS

- Time-resolved spectroscopy
- Multi-species gas sensing
- Precision ranging
- Nonlinear microscopy

Related publications

Coherently averaged dual-comb spectroscopy with a low-noise and high-power free-running gigahertz dual-comb laser
Phillips et al., Optics Express 31, 7103 (2023)



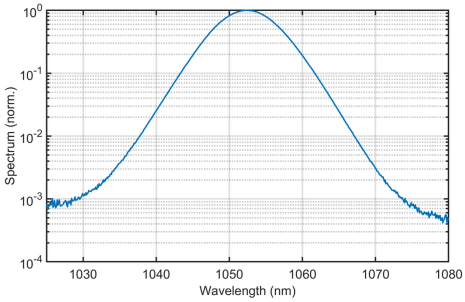
Shot-noise limited dual-comb supercontinuum
Camenzind et al., Optica Open 112418 (2024) (under peer review)

Long-range and dead-zone free dual-comb LiDAR for the interferometric tracking of moving targets
Camenzind et al., Arxiv:2411.05585 (2024)

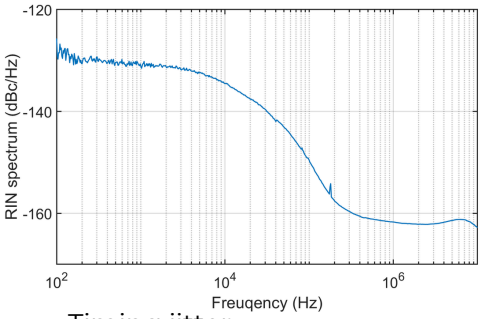
arXiv

EXAMPLE CHARACTERIZATION

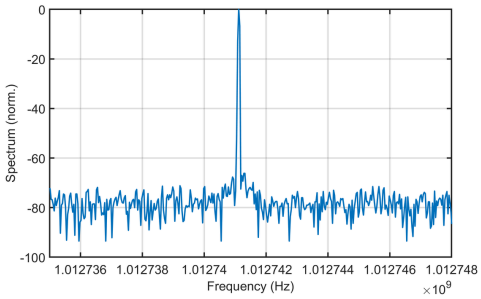
Optical spectrum



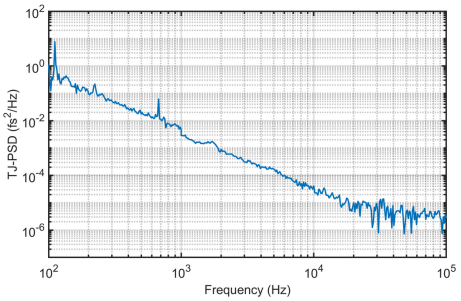
Relative intensity noise



Microwave spectrum



Timing jitter



LASER SPECIFICATIONS

Laser output	1050 +/- 20 nm, >1.5 W per comb (inquire for other wavelengths)
Repetition rate	1 GHz +/- 0.1 GHz
Pulse duration (FWHM)	<200 fs, clean sech^2 pulses
Beam quality factor M^2	<1.1
Timing-jitter PSD (fs^2/Hz)	< 0.01 fs^2/Hz for frequencies from 1 kHz
Individual comb RIN	<-160 dBc/Hz for frequencies from 1 MHz

DUAL-COMB MODELOCKING (OPTION)

Repetition rate difference	tunable to more than +/- 100 kHz
Relative timing noise	<10 fs [100 Hz, 100 kHz]

AVAILABLE CONTROLS

Repetition rate	f_{rep} actuation via piezo 0 - 150 V (option)
Repetition rate difference	Δf_{rep} actuation via piezo 0 - 150 V and coarse via motor (if applicable)
Power modulation	Pump diode current modulation capability for f_{CEO} locking

PHYSICAL DIMENSIONS

Laser (L x W x H)	240 x 140 x 85 mm³ (all-in one system)
Beam output height	60 mm on (W) side

REQUIREMENTS

Operating temperature	15-30°C with <25°C baseplate (contact cooling)
Relative humidity	Non-condensing environment
Power Consumption	< 100 W
Electrical requirements	24 VDC, 5 A

Product specifications and descriptions in this document are subject to change without notice.

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