

K2-1000-mini

Compact and powerful ultralow-noise laser

1 GHz repetition rate

High power operation

Ultrashort pulses

Dual-comb option



Compact solution
for spectroscopy



High-power for nonlinear
applications



Ultralow 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 mode-locked femtosecond light source with dual-comb mode-locked option, 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, supercontinuum generation and timing distribution.

CUSTOM OPTIONS

- Fiber coupled option
- Passively cooled (low power) version
- Wavelength options via K2-OPO-mini
- Sub-100 fs option

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)

Ultra-low noise spectral broadening of two combs in a single ANDi fiber

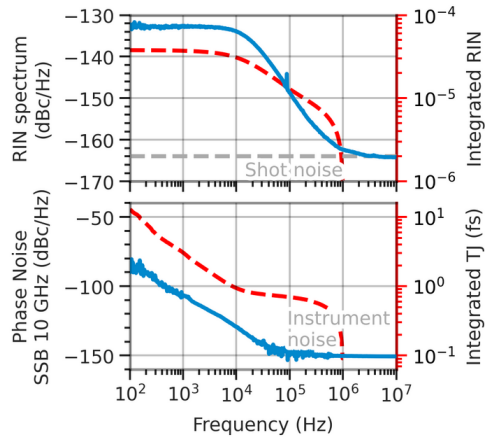
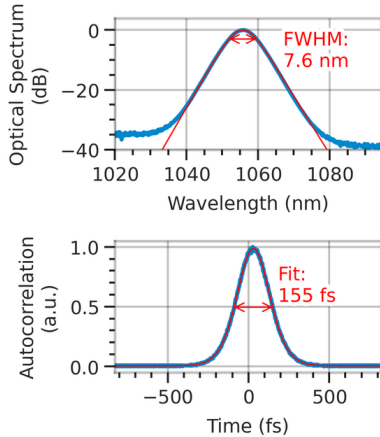
Camenzind et al., APL Photonics 10, 036119 (2025)

Long-Range and Dead-Zone-Free Dual-Comb Ranging for the Interferometric Tracking of Moving Targets

Camenzind et al., ACS Photonics 12, 1829 (2024)



EXAMPLE CHARACTERIZATION



SPECIFICATIONS

Laser wavelength	1050 nm $\pm$ 10 nm
Laser output power	>1.5 W
Repetition rate	1 GHz $\pm$ 0.1 GHz
Pulse duration (FWHM)	<200 fs, clean sech ² pulses, <100 fs option available
Timing-jitter PSD (fs ² /Hz)	<0.01 fs ² /Hz for frequencies above 1 kHz
Individual comb RIN	<-160 dBc/Hz for frequencies above 1 MHz

DUAL-COMB MODELOCKING (OPTION)

Repetition rate difference	Tunable between -100 kHz and +100 kHz
Relative timing noise	<10 fs [100 Hz, 100 kHz]

CONTROLS

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

DIMENSIONS

Laser (L x W x H)	240 x 140 x 85 mm ³ (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	20 – 70% (non-condensing)
Power consumption	<75 W
Electrical requirements	24 VDC, 5 A

Product specifications and descriptions in this document are subject to change without notice.
Specifications are for a temperature of $\pm 1^\circ\text{C}$ and a humidity variation of $\pm 10\%$.

