



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



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 with dual-comb modelocked 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

- Wavelength options
- Fiber coupled output
- Lower power consumption option
- Ultrabroadband 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

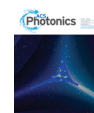
Phillips et al., Optics Express 31, 7103 (2023)

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

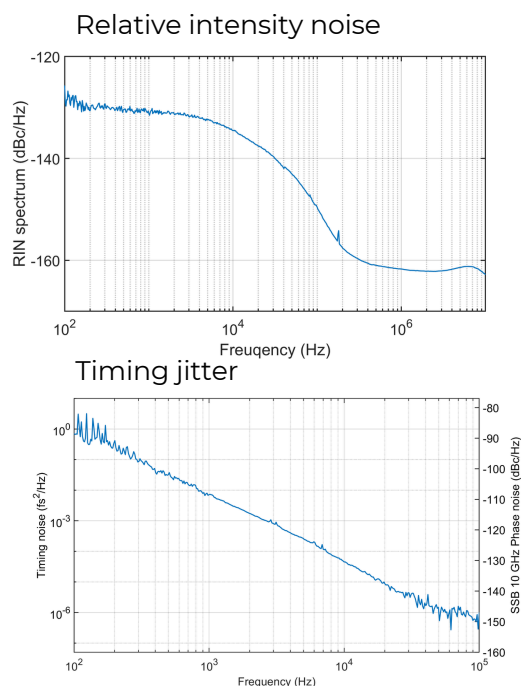
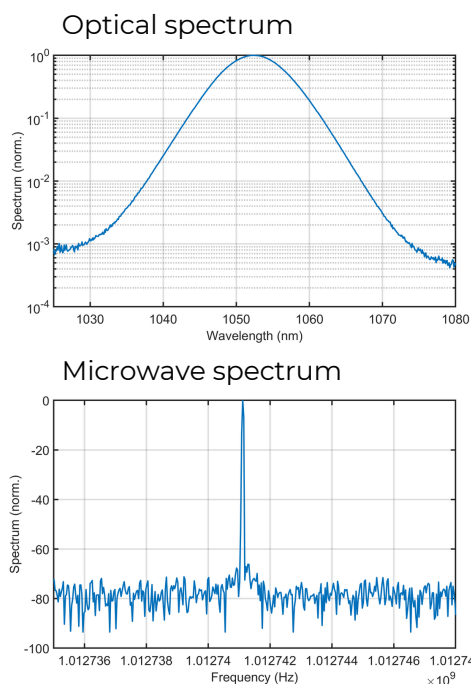
Camenzind et al., APL Photonics 10, 036119 (2025)

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



LASER SPECIFICATIONS

	Standard	Special options				
Laser wavelength	1050 nm	1450 nm	1550 nm	1645 nm	2400 nm	3300 nm
Laser output power	>1.5 W	>200 mW	>500 mW	>500 mW	>400 mW	>100 mW
Repetition rate	1 GHz +/- 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 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)	For standard option: 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	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.

