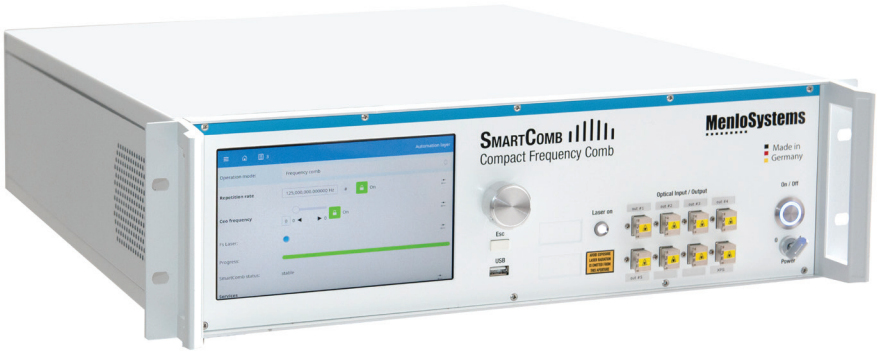
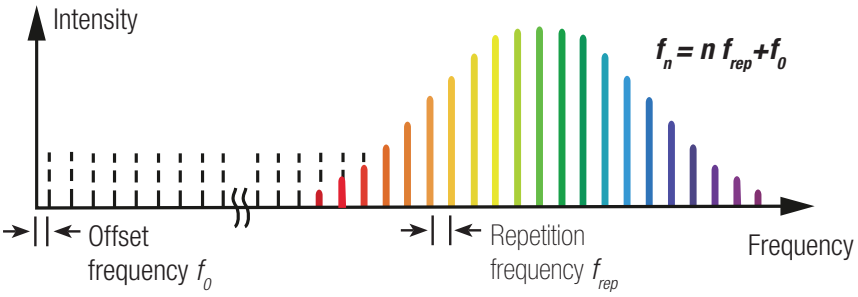
SmartComb

Compact Optical Frequency Comb
Precision in every pulse



All your comb applications at your fingertips:

Menlo Systems introduces its newest platform for metrology: The SmartComb 250, a compact, robust, high-end, and fully automated Frequency Comb system. This turn-key, all-in-one device, built with Menlo Systems' robust and reliable figure 9® fiber mode-locked oscillator technology, combines the unrivaled performance of our ultra-low-noise (ULN) frequency comb with a compact form factor of only 3 height units (3U) in a 19" rack format.
Up to 7 output ports are readily available to either directly interact with your application in the Er-band or seed spectral extensions and amplifiers, enabling experiments in the spectral range from 500 nm to 2100 nm. The SmartComb 250 ensures that spectral purity and stability are maintained throughout the entire covered spectral domain, making it ideal for use in both mobile and stationary applications, thus providing reliable performance for a wide range of scenarios. Furthermore, the underlying technology has already proven to be suitable for applications in demanding environments such as on-board aircraft and sounding rockets.



The optical comb frequencies f_n are defined by the repetition rate frequency f_{rep} = 250 MHz, the carrier envelope offset (CEO) frequency f_0 and an integer number n.

KEY SPECIFICATIONS

- Comb Spacing 250 MHz
- Accuracy < 2 x10^{-16} (τ > 100 s)
- Stability < 4 x 10^{-17} in 1 s
- Turn-key, Fully Automated or Remotely Controlled
- Offset Frequency f_0 Tunability > 500 MHz

APPLICATIONS

- High Precision CW Laser Stabilization
- Calibration of CW Lasers
- Length Metrology
- Cold Atoms and Ions
- LIDAR
- Low-noise Microwave Generation
- High Resolution Spectroscopy
- Spectral Purity Transfer: Transfer of Optical Reference Stability to all Comb Modes

FEATURES

- High Repetition Rate
- High Actuator Bandwidth >1 MHz for Repetition Rate and CEO Frequency
- Fully Fiber-coupled CEO Frequency Generation
- Turn-key Metrology System fully Automated, Designed for Continuous Operation

OPTIONS

- Up to 7 Output Ports
- Compatible with all Amplifiers and Spectral Extensions, Delivering Light from 500 nm to 2100 nm

* https://www.mouser.de/datasheet/2/3/AOCJY3-30603.pdf

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MenloSystems

Compact Optical Frequency Comb

COMPLETE SOLUTION:

The turn-key, fully hands-off optical setup is integrated into a 19”, 3U rack unit and offers unprecedented performance for its compactness. Even the stability of the highest performance optical clocks can be fully transferred via spectral extensions to your application over the spectral range from 500 nm to 2100 nm.

OPTICAL SPECIFICATIONS FOR EACH OUTPUT PORT

PROPERTY	VALUE	
Comb Spacing	250 MHz	
Central Wavelength	1560 nm	
Average Power	> 10 mW	
Spectral Width	> 25 nm	
Stability* (MDEV)	<4 x 10^{-17} in 1s**, <5 x 10^{-18} in 1000 s**	<5 x 10^{-13} in 1 s^{Δ}
Accuracy	< 8 x 10^{-19} for τ > 100 s**	< 1 x 10^{-14} in for τ > 100 s^{Δ}
Integrated Phase noise	< 50 mrad [100 Hz – 2 MHz], < 90 mrad [1 Hz – 10 MHz]	
Sum of Optical In- & Outputs	8	
Linewidth	< 1 Hz**	

*out-of-loop comb-comb-comparison, **phase lock to optical reference, $^{\Delta}$phase lock to rf reference

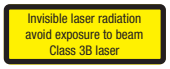
REQUIREMENTS

Form Factor	19” x 3U
Weight	<25 kg
Operating Voltage	100…115 V or 230 VAC, 50…60 Hz
Power Consumption	<100 W
Operating Temperature	25 ± 10 °C
Software	Includes full automation
Software Interfacing	Ethernet / USB

ORDERING INFORMATION

Product Code	SmartComb

Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire.



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