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THORLABS

FC1500-250 - October 7, 2021

Item # FC1500-250 was discontinued October 7, 2021. For informational purposes this is a copy of the website content at that time and is valid only for the stated product.

OPTICAL FREQUENCY COMB, YB-DOPED

- **Measure Optical Frequencies with High Accuracy and Stability**
- **Fiber-Based Optical Frequency Comb System Based on Patented Technology**
- **Up to 10 W Output Power**
- **Optional Third Order Compressor (TOD) for Short Pulses**

FC1000-250

OVERVIEW

Features

- Turnkey Metrology System, Fully Automated and Fully Fiber Coupled
- Includes Optical Unit: Oscillator with PM Output, Amplifier for Octave Generation, and Fiber-Coupled f:2f Interferometer
- Includes Electronic Control Tower: Control Units, Phase-Locked Loops, Displays, and Data Acquisition
- Repetition Rate up to 250 MHz
- Operational Range from 520 nm to 1040 nm
- Click Here to View Menlo Systems' Frequency Comb Brochure

Applications

- Laser Frequency Measurements
- Carrier Envelope Phase (CEP) Stabilized Seed
- Spectrometer Calibration, Astronomy
- Spectroscopy
- High Precision CW Laser Stabilization

Simon Kocur
Menlo Systems

Feedback?
Questions?
Need a Quote?

Please note that the FC1000-250 is available directly from Menlo Systems, Inc. within the United States and from Menlo Systems GmbH outside the United States.

United States
Phone: +1-973-300-4490
Email: ussales@menlosystems.com

Outside United States
Phone: +49-89-189166-0
Email: sales@menlosystems.com

Frequency comb technology makes direct measurement of absolute, SI-referenced optical frequencies possible. Menlo Systems' FC1000-250 Optical Frequency Comb is a flexible, fiber-based, femtosecond frequency comb system. The system is capable of providing a source for frequency metrology in both the visible and the near-IR regions (520 - 1040 nm) simultaneously. The laser operation relies on Menlo Systems' figure 9® mode locking technology, which ensures excellent stability and continuous performance.

The system features simple operation, as the femtosecond laser is ready to use at the press of a single button, and automatic phase lock loops ensure easy

stabilization to either an RF or an optical reference. Due to the mature system design with several combined actuators, users enjoy long-term operation with no adjustment necessary over a period of weeks. A wide range of optional features enables this versatile system to be tailored to customer-specific solutions; see the *Specs* tab for details.

S P E C S

FC1000-250 Specifications	
Performance Specifications	
Comb Frequency Spacing	250 MHz
Accuracy	10^{-14} in 120 s[a]
Stability	5 x 10^{-13} in 1 s[a]
Tuning Range of Comb Spacing	>2 MHz
Tuning Range of CEO Frequency	>250 MHz
Center Wavelength	1040 ± 10 nm
Laser Output Specifications	
Output Ports	Two Fiber-Coupled, Linearly Polarized, PM Output Ports
Central Wavelength	1025 - 1050 nm
Spectral Range	>20 nm
Average Output Power	>5 mW from Each Port
Environmental Specifications	
Input Requirements	10 MHz Frequency Reference, Power Level +7 dBm
Operating Voltage	100/115/230 VAC
Frequency	50 to 60 Hz
Power Consumption	<500 W[b]
Cooling Requirements	No Water Cooling Required
Operating Temperature	22 ± 5 °C
Optical Unit Dimensions / Weight	706 mm x 716 mm x 139 mm / 80 kg[b] (27.8" x 28.2" x 5.5" / 176 lbs)
Control Electronics Dimensions / Weight	600 mm x 800 mm x 1690 mm / 140 kg[b] (23.6" x 31.5" x 66.5" / 308 lbs)

a. Or same as reference, whichever applies first
b. For Standard System Configuration

Optional Packages

EOM-Phase Electro-Optic Phase Modulator
Integrated into the laser cavity; allows high-performance phase locking to an optical reference using a high bandwidth repetition rate actuator. With this EOM option, sub-Hz line widths can be achieved.

FPC 1000 Fabry-Perot Cavity for Mode Filtering
Increases the fundamental mode spacing to a user-defined frequency in the 2 to 25 GHz range. The Fabry-Perot cavity is fiber coupled and temperature stabilized.

Orange PULSE-YDFA Ytterbium-Doped Fiber Amplifer
All polarization-maintaining (PM) amplifier delivers intense pulses at 1040 ± 10 nm. Available with single-clad fiber, which yields >1 W of power over a >15 nm spectral range, or with double-clad fiber, which yields >10 W of power over a >10 nm spectral range.

M-520 High Power Measuring Port, 520 nm

Output port provides stabilized comb light with peak power at 520 nm. Contains an amplifier and subsequent frequency conversion, delivering ≥250 mW average power in a 3 nm window centered on 520 nm. The output is free space.

BDU Beat Detection Unit
Used for generating a beat with a CW laser at a user-defined wavelength. Available in fiber-coupled or free-space versions.

LLE-SYNCHRO Laser Locking Electronics
Allows a CW laser to be locked to the stabilized frequency comb. Requires the BDU beat detection unit for generating the beat. Requires the CW laser to be tunable.

Microwave Ultrastable RF Output
Ultrastable RF output in the 1 MHz to 10 GHz range. Utilizes a fast photodetector and a frequency divider where needed.

Yb-TOD-Compressor Compression Unit
External compressor for pulse lengths down to 150 fs. Compensates for second- and third-order dispersion.

GPS GPS-Based 10 MHz Frequency Reference
Provides the RF reference input signal for the frequency comb, combining the superior short-term stability of an ultrastable quartz oscillator with the long-term accuracy of the GPS.

WLM-NIR Integrated Wavelength Meter
Integrated wavelength meter with 100 MHz accuracy for 900 - 1700 nm.

WLM-VIS Integrated Wavelength Meter
Integrated Wavelength Meter with 100 MHz accuracy for 500 - 1100 nm.

Part Number	Description	Price	Availability
FC1000-250	Ytterbium Optical Frequency Comb	$0.00	Menlo Lead Time