

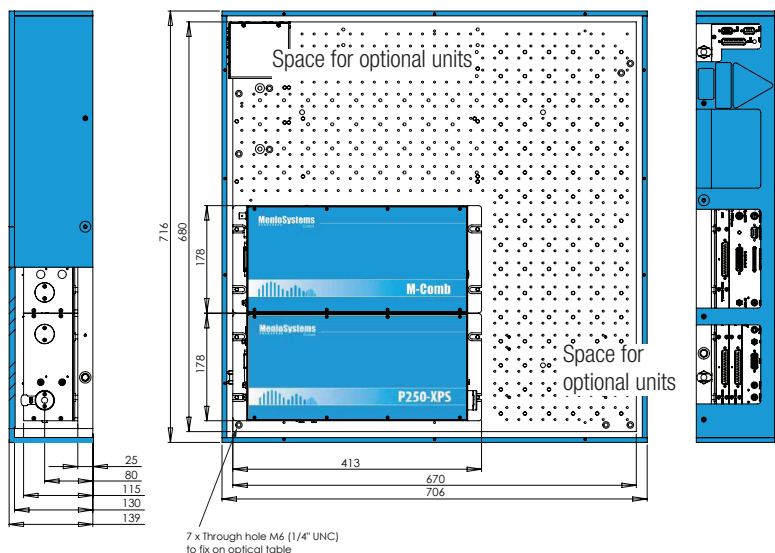
# FC1500-250-WG

## Optical Frequency Comb



The FC1500 Optical Frequency Comb is a compact and flexible fiber-based frequency comb system for direct measurement of absolute optical frequencies. The laser operation relies on the figure 9<sup>®</sup> mode locking technology, which ensures excellent stability and low-noise operation. The femtosecond laser is ready to use at the press of a single button, and automatic phase lock loops ensure easy stabilization to either a RF or an optical reference. Due to the mature system design including several motorized actuators, our customers report long-term operation where the comb is phase locked over weeks. With the extension packages M-VIS and M-NIR, the system covers the full visible to near infrared spectral range from 500 nm to 2100 nm.

### OPTICAL UNIT OF FC1500-250-WG



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### KEY SPECIFICATIONS

- Comb Spacing 250 MHz
- Accuracy Better  $10^{-14}$  in 120 s
- Stability Better  $5 \times 10^{-13}$  in 1 s
- Operational Range from 500 nm to 2  $\mu$ m

### APPLICATIONS

- High Precision CW Laser Stabilization
- FTIR Spectroscopy
- Calibration of Lasers
- High Resolution Spectroscopy
- Low-noise Microwave Generation

### FEATURES

- High Repetition Rate
- Fully Fiber-coupled CEO Frequency Generation
- Turnkey Metrology System  
Fully automated with comb control and data acquisition analysis software, designed for continuous operation

### OPTIONS

#### Complete Solution with Modular Extensions

Menlo Systems Optical Frequency Combs are complete solutions including everything required to serve customer's applications. The modular system architecture allows for easy addition of more functionality to an existing system. Multiple extensions can be combined in a system.

- **EOM-Phase:** Electro-optic Phase Modulator included with HS
- **M-NIR:** Extension Package NIR
- **M-VIS:** Extension Package VIS
- **HMP:** High Power Measuring Port
- **P250 PM Pulse EDFA:** Erbium-doped Fiber Amplifier
- **M-780:** High Power output around 780 nm
- **BDU:** Beat Detection Unit
- **LLE-SYNCR0:** Laser Locking Electronics
- **Microwave:** Ultrastable RF Output
- **GPS:** -based 10 MHz Frequency Reference
- **WLM-NIR /WLM-VIS:** Integrated Wavelength Meters

# FC1500-250-WG

**MenloSystems**

## Optical Frequency Comb

### COMPLETE SOLUTIONS:

The optical frequency comb is a complete system that includes an Er-doped fiber laser with five PM outputs, an amplifier for octave generation, and an f:2f interferometer. The fully fiber-coupled interferometer is based on waveguide technology for detecting the carrier envelope offset frequency (CEO) in the frequency comb. The turn-key, fully hands-off optical setup offers compactness in an extremely robust design and features 24/7 operation with remote access to measured data. A separate rack cabinet houses control units, phase-locked-loops, data acquisition, and displays.

### SPECIFICATIONS

### FC1500-250-WG

|   |   |
|---|---|
| Comb Spacing  | 250 MHz   |
| Accuracy  | $10^{-14}$ in 120 s*  |
| Stability   | $5 \times 10^{-13}$ in 1 s*   |
| Tuning Range of Spacing Between Individual Comb Lines | >2 MHz  |
| Tuning Range of CEO Frequency                         | >250 MHz  |
| Laser Outputs   | five fiber-coupled, linearly polarized, PM output ports             |
| Center Wavelength                                     | 1560 nm   |
| Spectral Range  | >25 nm (500-1050 nm with M-VIS, 1050-2100 nm with M-NIR)            |
| Average Output Power                                  | >13 mW from each laser port (>60 mW with M-VIS, >200 mW with M-NIR) |

\* or same as reference, whichever applies first

### REQUIREMENTS

|                                       |  |
|---------------------------------------|--|
| 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   |
| Cooling Requirements                  | no water cooling required                      |
| Operating Temperature                 | $22 \pm 5$ °C                                  |
| Optical Unit Dimensions/Weight        | 706 x 716 mm, approx. 80 kg**                  |
| Control Electronics Dimensions/Weight | 600 x 800 mm, approx. 140 kg**                 |

\*\*Standard system configuration

### ORDERING INFORMATION

|                     |               |
|---------------------|---------------|
| <b>Product Code</b> | FC1500-250-WG |
|---------------------|---------------|

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



Invisible laser radiation  
avoid exposure to beam  
Class 4 laser

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