Menlo Systems’ fiber based femtosecond laser sources integrate the latest achievements in fiber technology into easy-to-use products. Both the M-Comb and orange-Comb feature polarization maintaining outputs, ensuring excellent stability. The lasers are maintenance free and ready to use at the press of a single button. Engineered for the most demanding scientific applications, both lasers feature actuators for the laser repetition rate and the carrier envelope offset frequency required for high bandwidth PLLs as well as for extended tuning ranges. Customize your laser with the available options to match the requirements of your application.

**KEY SPECIFICATIONS**
- Wavelength 1560 nm and 1040 nm
- Repetition Rate 250 MHz
- Tuning Range of Repetition Rate >4 MHz
- Tuning Range of CEO Frequency >250 MHz
- Sub-Hz Linewidth of Comb Modes with EOM-Phase Option

**APPLICATIONS**
- Optical Frequency Combs
- Distribution of Stable Optical Frequencies
- Low-noise Microwave Generation
- High-resolution Spectroscopy
- Frequency Comb Fourier Spectroscopy
- High Precision CW Laser Stabilization

**FEATURES**
- Integrated Actuators for Repetition Rate and CEO Frequency Control
- Additional Actuators for Extended Tuning Range
- PM Outputs
- Outputs can be turned into High Power Ports
- Core Component of Versatile Optical Frequency Synthesizers
- Designed for High Precision Metrology Systems with $10^{-14}$ Accuracy and $5 \times 10^{-13}$ Stability in one Second
- Hands-off, 24/7 Operation

**OPTIONS**
- **EOM-PHASE**
  Electro-Optic Phase Modulator
  Intracavity EOM for high-performance phase locking to an optical reference
- **MULTIBRANCH**
  Additional Seed Ports
  Seeding of multiple amplifiers with optional subsequent conversion to cover multiple wavelengths

**PERFORMANCE DATA**

**Optical spectrum of M-Comb**

**Optical spectrum of orange-Comb**
M-Comb
orange-Comb
Femtosecond Fiber Laser 1560 nm, 1040 nm

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th></th>
<th>M-COMB</th>
<th>ORANGE-COMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Wavelength</td>
<td>1560 nm +/- 20 nm</td>
<td>1040 nm +/- 10 nm</td>
</tr>
<tr>
<td>Spectral Width</td>
<td>&gt;25 nm</td>
<td>&gt;15 nm</td>
</tr>
<tr>
<td>Average Power</td>
<td>&gt;60 mW</td>
<td>&gt;10 mW</td>
</tr>
<tr>
<td>Repetition Rate</td>
<td>250 MHz</td>
<td>250 MHz</td>
</tr>
<tr>
<td>Repetition Rate Tuning Range</td>
<td>&gt;4 MHz</td>
<td>&gt;2 MHz</td>
</tr>
<tr>
<td>CEO Frequency Tuning Range</td>
<td>&gt;250 MHz</td>
<td>&gt;250 MHz</td>
</tr>
<tr>
<td>Output ports*</td>
<td>5 x fiber-coupled (LC/APC)</td>
<td>1 x fiber-coupled (FC/APC) for upgrade with Menlo M-Phase module</td>
</tr>
<tr>
<td></td>
<td>1 x fiber-coupled (LC/APC) for upgrade with Menlo M-Phase module</td>
<td>1 x fiber-coupled (E2000) for upgrade with Menlo M-Phase module</td>
</tr>
<tr>
<td>Polarization</td>
<td>linear, PM fiber</td>
<td>linear, PM fiber</td>
</tr>
</tbody>
</table>

*With MULTIBRANCH option different port configurations are available.

**REQUIREMENTS**

<table>
<thead>
<tr>
<th></th>
<th>M-COMB</th>
<th>ORANGE-COMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>100/115/230 VAC</td>
<td>100/115/230 VAC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 to 60 Hz</td>
<td>50 to 60 Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>120 VA</td>
<td>120 VA</td>
</tr>
<tr>
<td>Cooling Requirements</td>
<td>no water cooling is required</td>
<td>no water cooling is required</td>
</tr>
<tr>
<td>Laser Head Stabilization</td>
<td>active temperature stabilization</td>
<td>active temperature stabilization</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>22 ± 5 °C</td>
<td>22 ± 5 °C</td>
</tr>
<tr>
<td>Laser Head Dimensions/Weight</td>
<td>413 x 90 x 178 mm³ / 7 kg</td>
<td>413 x 120 x 178 mm³ / 9 kg</td>
</tr>
<tr>
<td>Control Unit Dimensions/Weight</td>
<td>448 x 132 x 437 mm³ / 10 kg</td>
<td>448 x 132 x 437 mm³ / 10 kg</td>
</tr>
<tr>
<td>Warm-Up Time</td>
<td>&lt;60 s</td>
<td>&lt;60 s</td>
</tr>
</tbody>
</table>

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th></th>
<th>M-Comb</th>
<th>orange-Comb</th>
</tr>
</thead>
</table>

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

---

**MenloSystems**

Menlo Systems GmbH
T+49 89 189 166 0
sales@menlosystems.com

Menlo Systems, Inc.
T+1 973 300 4490
ussales@menlosystems.com

Thorlabs, Inc.
T+1 973 579 7227
sales@thorlabs.com

www.menlosystems.com