Femtosecond Fiber Lasers

EFO. Femtosecond Er-doped Fiber Laser

- Ultrashort pulse duration down to 50 fs
- Up to 5 W output power at 1560 nm
- Small footprint and high stability
- Turn-key operation
- Optional benchtop version

Product overview

Fiber-based femtosecond lasers offer robust and stable operation without the need for constant realignment. The low cost and stability of fiber-based femtosecond lasers mean that even beginner research labs can have a femtosecond pulse source without the need for expensive or complicated equipment. This brings ultrafast research into the realm of undergraduate and other educational environments.

With pulse lengths of 100 fs at 1550 nm fiber femtosecond lasers can also be used as seed sources for femtosecond amplifiers. The 1550 nm wavelength of Er-doped fiber lasers also makes them an attractive tool for ultrahigh-speed optical communications applications.

### EFO technical specifications

<table>
<thead>
<tr>
<th></th>
<th>EFO-80/10</th>
<th>EFOA-120/100</th>
<th>EFOA-100/260</th>
<th>EFOA-100/440</th>
<th>EFOA-300/2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wavelength (fixed)</strong></td>
<td>1560±10 nm</td>
<td></td>
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<tr>
<td><strong>Repetition rate (fixed)</strong></td>
<td>65±5 or 80±5 MHz (100±5 MHz upon request)</td>
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<tr>
<td><em><em>Pulse duration</em> (fixed)</em>*</td>
<td>&lt;80 fs</td>
<td>&lt;120 fs</td>
<td>&lt;100 fs</td>
<td>&lt;100 fs</td>
<td>&lt;300** fs</td>
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<tr>
<td><strong>Average output power</strong></td>
<td>&gt;10 mW</td>
<td>&gt;100 mW</td>
<td>&gt;260 mW</td>
<td>&gt;440 mW</td>
<td>&gt;2** W</td>
</tr>
<tr>
<td><strong>Polarization, linear</strong></td>
<td>vertical</td>
<td>horizontal</td>
<td>horizontal</td>
<td>horizontal</td>
<td>horizontal</td>
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<tr>
<td><strong>Output type</strong></td>
<td>collimated free-space, TEMoo</td>
<td></td>
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<tr>
<td>(fiber-coupled output upon request, output pulse energy limited to 1.2 nJ)</td>
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<tr>
<td><strong>Long-term power stability (8 h, at equal ambient temp.)</strong></td>
<td>&lt;0.5% rms</td>
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<td>&lt;1% rms</td>
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<tr>
<td><strong>RF sync output</strong></td>
<td>SMA connector (200-300 mV @ 50 ohm load)</td>
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<tr>
<td><strong>Mode-lock status</strong></td>
<td>SMA connector (3.5/0 V) and LED</td>
<td></td>
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<tr>
<td><strong>Service optical output</strong></td>
<td>FC/APC (~1 mW)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Laser head dimensions, mm</strong></td>
<td>180x210x50(70)</td>
<td>180x210x70(90)</td>
<td>180x210x70(90)</td>
<td>380x250x120</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply unit dimensions, mm</strong></td>
<td>230x200x85</td>
<td>230x200x130</td>
<td>230x200x130</td>
<td>470x385x155</td>
<td></td>
</tr>
</tbody>
</table>

* - 50 fs to 5 ps customization upon request for certain power ratings, please enquire;
** - <100 fs, 2.5 W upon request; up to 5 W upon request.

Possible application of the EFO fiber lasers:

- Amplifier systems seeding
- Terahertz generation and detection
- Multi-photon microscopy
- Frequency metrology
- Ultrafast spectroscopy

- Semiconductor device characterization
- Supercontinuum generation
- Optical coherence tomography
- Telecommunications

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LASERS AND OPTICAL SYSTEMS

Avesta Ltd., 11 Fizicheskaya Street Triotlsk, 108840, Moscow, Russia
Tel.: +7 (495) 967-94-73
Fax: +7 (495) 646-04-95
www.avesta.ru
fs@avesta.ru
EFO-80/10 typical autocorrelation trace

Typical spectrum of an EFO laser system

EFOA-100/260 typical autocorrelation trace

Typical spectrum of an EFOA laser system

EFO dimensions

EFO-80/10 optical head (mm [inches])

EFOA optical head (mm [inches])