OPerA Solo

Fully Integrated, Computer-Controlled Femtosecond Optical Parametric Amplifier Accessory

OPerA Solo is a one-box femtosecond optical parametric amplifier (OPA) that extends the wavelength availability of the Astrella and Legend Elite HE+ families of ultrafast amplifiers from 240 nm to 20 µm. OPerA Solo is the only kHz OPA that integrates all pump conditioning optics, wavelength extension options and wavelength separation optics within one enclosure. This makes OPerAa Solo a very compact, easy-to-use and stable device. OPerA Solo incorporates well-proven TOPAS technology including white light seeding for lowest output noise performance.

FEATURES & BENEFITS

• Fully integrated one-box system
• Convenient computer-controlled tuning
• Options for 240 nm to 20 µm tuning
• Configurations to accommodate Femto, USP, and USX pulse widths from Coherent kHz femtosecond amplifiers
• "Fresh pump" configuration for optimum spatial, temporal, and spectral performance
• Multiple OPAs may be pumped by a single kHz amplifier

APPLICATIONS

• Time-resolved Spectroscopy
• Multi-dimensional Spectroscopy
• Surface SFG/SHG
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Wavelength Range</th>
<th>Pulse Energy</th>
<th>Polarization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1160 to 1600 nm</td>
<td>&lt;220 µJ (S+I)</td>
<td>V</td>
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<tr>
<td>1600 to 2600 nm</td>
<td>&gt;220 µJ (S+I)</td>
<td>H</td>
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### OPTIONS

<table>
<thead>
<tr>
<th>Package</th>
<th>Wavelength Range</th>
<th>Signal Energy</th>
<th>Idler Energy</th>
<th>SHI</th>
<th>SFI</th>
<th>SFS</th>
<th>FHI</th>
<th>FHS</th>
<th>SHFSF</th>
<th>NDFG1</th>
<th>NDFG2</th>
<th>SHSF1</th>
<th>SHSFI</th>
<th>NDFG1-KTA</th>
<th>NDFG2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH Package</td>
<td>800 to 1160 nm</td>
<td>&gt;30 µJ</td>
<td>&gt;50 µJ</td>
<td>V</td>
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<td>SF Package</td>
<td>533 to 600 nm</td>
<td>&gt;30 µJ</td>
<td>&gt;50 µJ</td>
<td>V</td>
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<td>FH Package</td>
<td>400 to 480 nm</td>
<td>&gt;5 µJ</td>
<td>&gt;10 µJ</td>
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<tr>
<td>SHSF Package</td>
<td>266 to 295 nm</td>
<td>&gt;3 µJ</td>
<td>&gt;8 µJ</td>
<td>H</td>
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<tr>
<td>NDFG Package</td>
<td>2.6 to 11 µm</td>
<td>&gt;2 µJ at 4 µm</td>
<td>&gt;8 µJ at 4 µm</td>
<td>H</td>
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<tr>
<td>NDFG1-KTA</td>
<td>2.6 to 4.9 µm</td>
<td>&gt;2 µJ at 4 µm</td>
<td>&gt;8 µJ at 4 µm</td>
<td>H</td>
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<td>NDFG2</td>
<td>4 to 20 µm</td>
<td>&gt;1 µJ at 5 µm</td>
<td>&gt;4 µJ at 5 µm</td>
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1. All specifications are based on pumping with 1 mJ from Astrella, Legend Elite or Libra systems at 1 kHz (contact factory for other pump systems). Specifications for harmonic wavelengths pumped by Legend Elite USA and Legend Elite Duo USA models are 25% lower.
2. Energy scales linearly with pump in range 0.2 mJ to 4 mJ for <110 fs pump and 0.2 mJ to 3.5 mJ for <50 fs pump.
3. Signal pulse width is (0.7 to 1.0) x pump for <110 fs pump duration, (1 to 1.5) x pump for <50 fs pump duration.
4. Energies given at peak of tuning curves. SHSF/FH/NDFG wavelength extension packages listed include all mixing crystals listed in preceding options (e.g., SHSF option includes crystals, etc., to tune from 240 to 1160 nm).
5. Maximum pump repetition rate – 1 kHz. Limited crystal lifetime of 1000 to 2000 hr.
6. For <50 fs pump NDFG tuning ranges are as follows: NDFG1 - 2.6 µm to 9 µm, NDFG1-KTA - 2.6 µm to 4.5 µm and NDFG2 - 4 µm to 10 µm.
MECHANICAL SPECIFICATIONS

OPerA Solo

Top View

Side View

Front View

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Coherent offers a limited warranty for all OPerA Solo Amplifiers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.

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