Innovative Photonic Solutions introduces our Master Oscillator Power Amplifier (MOPA) that offers single-frequency and high power output. We take our proprietary wavelength stabilization technique a step further and amplify the very stable narrow linewidth output allowing our customers to have the best of both worlds.

We offer an internally PM fiber coupled MOPA with >300 mW single-frequency output power. Unlike other MOPAs that utilize external fiber alignment fixtures and require alignment each time environmental changes occur, IPS’s MOPA is permanently affixed and needs no adjustment. For users that need open beam output, we offer an open beam MOPA with >500 mW single frequency output. Both versions of our MOPA are power adjustable and come fully “turn-key” in UL/CE and IEC certified modules with high performance laser drive and temperature controls and all safety features.

With high power and single-frequency, IPS’s MOPAs are ideal for Raman Imaging & Microscopy, laser trapping & cooling, and applications that require a highly coherent light source like Speckle Imaging.

**Standard Wavelengths**

- 760 nm
- 780 nm
- 785 nm

Additional wavelengths available upon request

**Single-Frequency Internally PM Fiber Coupled MOPA**

- Wavelength Stabilized Spectrum
- > 300 mW PM Fiber Coupled output power
- TEM00 with M2< 1.05
- UL/CE and IEC Certified
- Turn-Key Operation
- User adjustable output power
- Narrow Spectral Linewidth
- >40 dB SMSR Typical

**Single-Frequency Open Beam MOPA**

- Wavelength Stabilized Spectrum
- Circularized, astigmatism-free beam
- > 500 mW Open Beam Output
- 1W Open Beam Output upon request
- UL/CE and IEC Certified
- Turn-Key Operation
- User adjustable output power from 0 to 100%
- Narrow Spectral Linewidth
- >40 dB SMSR Typical
- >50 dB SMSR with laser line filter
PM Fiber Coupled Single-Frequency MOPA

The Innovative Photonic Solutions (IPS) Master Oscillator Power Amplifier (MOPA) provides a powerful and extremely stable wavelength stabilized laser source that is ideal for scientific applications including Raman Spectroscopy, Raman microscopy and imaging, and Illumination.

IPS’s fiber coupled MOPA is internally PM fiber coupled which provides TEM\(_{00}\) output with M\(^2\) < 1.05 and >300 mW output power.

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Min. Power (mW)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>760</td>
<td>300</td>
<td>I0760SM0300PA-MOPA</td>
</tr>
<tr>
<td>780</td>
<td></td>
<td>I0780SM0300PA-MOPA</td>
</tr>
<tr>
<td>785</td>
<td></td>
<td>I0785SM0300PA-MOPA</td>
</tr>
</tbody>
</table>

### Optical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength Tolerance</td>
<td>+/- 0.5 nm</td>
</tr>
<tr>
<td>Spectral Linewidth ((\Delta\lambda))</td>
<td>&lt; 100 MHz typical</td>
</tr>
<tr>
<td>SMSR</td>
<td>35 - 45 dB</td>
</tr>
<tr>
<td>Output Power Stability</td>
<td>&lt; 3% short term (over seconds)</td>
</tr>
<tr>
<td>Output Power Adjustability</td>
<td>zero to full power</td>
</tr>
<tr>
<td>Beam Diameter</td>
<td>~ 4(\mu)m at exit of fiber</td>
</tr>
<tr>
<td>Fiber Type</td>
<td>Corning PM850, Panda-style PM fiber, NA ~0.1</td>
</tr>
<tr>
<td>Peak Wavelength Drift</td>
<td>+/- 0.07 nm</td>
</tr>
<tr>
<td>Modulation Rate</td>
<td>10 kHz</td>
</tr>
<tr>
<td>Warm-up time</td>
<td>10 seconds from cold start</td>
</tr>
<tr>
<td></td>
<td>1.5 seconds from warm start</td>
</tr>
</tbody>
</table>

### Mechanical Specifications – PM Fiber Coupled MOPA

- **Front View:**
  - 6.94 x 6.00
  - 4.00 (102 mm)
  - 4.14

- **Side View:**
  - 6.94 (173 mm)

- **Back View:**
  - 9.45
  - 6.94 (210 mm)

### Operational Notes

1. Do not retro-reflect beam! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty.
2. Knob on front adjusts power by adjusting drive current. LED readout is in amperes.
3. See Operation Manual for full operating and safety instructions. This document is meant to offer a product overview.

### Electrical Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>100 – 240 VAC, 50 – 60 Hz, 0.4 A</td>
</tr>
<tr>
<td>Fuse Rating</td>
<td>250 V, 3.14 A, Slow Blow, 5 mm x20 mm, 2 each</td>
</tr>
</tbody>
</table>

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Open Beam Single-Frequency MOPA

The Innovative Photonic Solutions (IPS) Master Oscillator Power Amplifier (MOPA) provides a powerful and extremely stable wavelength stabilized laser source that is ideal for scientific applications including Raman Spectroscopy and Illumination. The Open beam MOPA offers TEM$_{00}$ output with $M^2 < 1.7$ (in center lobe) and >500 mW output power.

**Up to 1W available upon request.**

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Min. Power (mW)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>760</td>
<td>500*</td>
<td>I0760SR0500B-MOPA</td>
</tr>
<tr>
<td>780</td>
<td></td>
<td>I0780SR0500B-MOPA</td>
</tr>
<tr>
<td>785</td>
<td></td>
<td>I0785SR0500B-MOPA</td>
</tr>
</tbody>
</table>

**Physical Specifications**

- **Module Dimensions**: 229 x 175 x 113 mm
- **Module weight**: 100 ounces
- **Case Material**: Anodized Aluminum
- **Operating Temperature**: 10 to 35 degrees C
- **Environment**: 0-80% Humidity, non-condensing
- **Storage Temperature**: -10 to + 55 degrees C

**Operational Notes**

1. Do not retro-reflect beam! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty.
2. Knob on rear panel adjusts power by adjusting drive current.
3. See Operation Manual for full operating and safety instructions.

This document is meant to offer a product overview.

**Mechanical Specifications – Open Beam MOPA**

**General Optical Specifications**

- **Wavelength Tolerance**: +/- 0.5 nm
- **Spectral Linewidth ($\Delta\lambda$)**: < 100 MHz typical
- **SMSR**: 35 - 45 dB
- **Output Power Stability**: < 3% short term (over seconds)
- **Output Power Adjustable**: zero to full power
- **Beam Diameter**: ~0.5 mm at exit
- **Divergence**: ~ 3 mrad
- **Peak Wavelength Drift**: +/- 0.07 nm
- **Modulation**: 10 kHz

**Electrical Requirements**

- **Input Power**: 100 – 240 VAC, 50 – 60 Hz, 0.4 A
- **Fuse Rating**: 250 V, 3.14 A, Slow Blow, 5 mm x 20 mm, 2 each

*Up to 1W open beam output power available upon request*