Reduced Cladding Fiber Optic Polarizers

FEATURES:
- Ø 80µm cladding fiber
- High extinction ratio
- Low loss
- Near zero back reflection
- Low cost
- Wide wavelength operating range
- Small size
- Rugged packaging
- All-fiber construction

EXAMPLE APPLICATIONS:
- Fiber optic gyroscopes
- Polarimetric fiber sensor systems
- Optical fiber sensors
- High density fiber systems

EVANESCENT FIELD POLARIZERS
Phoenix evanescent field polarizers are produced by replacing the cladding in the locally processed region of the fiber with a polarization selective material. Within the polarizing region one polarization mode of the single mode fiber is highly attenuated and the other mode propagates with virtually no loss. Extinction ratios above 50dB are readily achievable whilst maintaining extremely low transmission loss of the required polarization mode.

REDUCED CLADDING RANGE
Phoenix reduced cladding polarizers have been designed for applications utilizing 80µm clad fiber. The devices are broadband, but optimized for 1300nm and 1550nm operational wavelengths. The polarizers are available with singlemode or polarization maintaining fiber tails.

The all-fiber construction providing low loss, virtually zero reflection with high extinction ratio makes these devices ideal for polarization sensitive sensor systems such as the optical fiber gyroscope.
### SPECIFICATIONS:

<table>
<thead>
<tr>
<th></th>
<th>SM/SM</th>
<th>SM/PM</th>
<th>PM/PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wavelength range</strong></td>
<td>1530nm – 1640nm</td>
<td>1450nm – 1530nm</td>
<td>1280nm – 1320nm</td>
</tr>
<tr>
<td><strong>Maximum extinction ratio</strong></td>
<td>&gt;45dB</td>
<td>&gt;40dB</td>
<td>&gt;40dB</td>
</tr>
<tr>
<td><strong>Insertion loss</strong></td>
<td>&lt;1dB: Typ. 0.5dB</td>
<td>&lt;1dB: Typ. 0.8dB</td>
<td>&lt;1.5dB: Typ. 1dB</td>
</tr>
<tr>
<td><strong>Wavelength range</strong></td>
<td>1450nm – 1530nm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum extinction ratio</strong></td>
<td>&gt;45dB</td>
<td>&gt;40dB</td>
<td>&gt;40dB</td>
</tr>
<tr>
<td><strong>Insertion loss</strong></td>
<td>&lt;0.5dB</td>
<td>&lt;1dB</td>
<td>&lt;1.5dB</td>
</tr>
<tr>
<td><strong>Wavelength range</strong></td>
<td>1280nm – 1320nm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum extinction ratio</strong></td>
<td>&gt;35dB</td>
<td>&gt;35dB</td>
<td>&gt;35dB</td>
</tr>
<tr>
<td><strong>Insertion loss</strong></td>
<td>&lt;0.5dB</td>
<td>&lt;1dB</td>
<td>&lt;1.5dB</td>
</tr>
<tr>
<td><strong>Return loss</strong></td>
<td>&gt;70dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Package size</strong></td>
<td>standard: 50 x 2 dia. 30 x 2 dia.</td>
<td>miniature: 75 x 3 dia. 50 x 3 dia.</td>
<td>100 x 3 dia. 80 x 3 dia.</td>
</tr>
<tr>
<td><strong>Operating temperature range</strong></td>
<td>-5°C to 70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transportation/storage</strong></td>
<td>-40°C to 85°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fiber type</strong></td>
<td>SMF 28</td>
<td>SMF28/PANDA</td>
<td>PANDA/PANDA</td>
</tr>
<tr>
<td><strong>Pigtails</strong></td>
<td>1m fiber standard, 900µm loose tube optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outer packaging</strong></td>
<td>Stainless steel tube</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All dimensions are approximate and may vary slightly.

### Notes to Specifications:

- All specifications are worst case for the wavelength range selected; actual products commonly exhibit better performance.
- All polarizers are tested and graded into performance groups.

1. The devices will provide polarization over the full wavelength range for which the fiber is single mode. Performance characteristics are wavelength dependent and the devices will meet specification as follows:
   - Type 15 – 1530nm to 1570nm
   - Type 13 – 1280nm to 1320nm

2. These are the maximum extinction ratios typically achievable for each of the options. If alternative values are required please discuss with our sales representative.

### PRODUCT ORDERING INFORMATION:

Note: Not all options below are available in all polarizer types, please check with our sales representative, to ensure your specific requirements can be met.

- Package size: POL – standard MPOL – miniature
- Wavelength: 15 – 1550nm 13 – 1300 nm
- Input/output fiber: SS – SM/SM SP – SM/PM PP – PM/PM
- Connectors: 0 – none
- Cable type: 0 – none

---

**Phoenix Photonics Limited,** U6 Vulcan House, Restmor Way, Wallington, SM6 7AH, UK.
Web: [www.phoenixphotonics.com](http://www.phoenixphotonics.com) Email: sales@phoenixphotonics.com
Tel: +44 (0) 20 8669 8559 Fax: +44 (0) 20 8669 7667

Polarizers_80um_V1.1_0104.doc