The PowerSpectrum™ HPR fiber Bragg-grating (FBG) cavity reflectors are specifically designed for high-power fiber lasers. The HPR reflectors are suitable for multi-kW lasers and are tailored to fit any fiber oscillator design.

TeraXion's primary goal for the PowerSpectrum™ HPR reflectors is to reduce the cost-per-watt of high-power laser systems by enabling customers to increase the power produced by individual laser oscillators, thus reducing the number of laser cavities needed to achieve the highest power levels.

TeraXion's proprietary FBG manufacturing process allows for a wide reflection bandwidth and low-loss reflectors, resulting in reduced non-linear effects and highly effective lasers.

Top 5 Features

- **Power handling:** The efficient heat management of the PowerSpectrum™ HPR reflectors allows for reliable operation in multi-kW laser designs.
- **High efficiency:** By limiting component insertion loss, hence improving optical conversion efficiency, the PowerSpectrum™ HPR reflectors reduce overall laser system costs.
- **Value:** The PowerSpectrum™ HPR reflectors ensure that each laser oscillator produces optimal power, simplifying the laser system design and decreasing cost-per-watt by reducing the number of oscillators required.
- **Reliability:** Long-term dependability is critical for industrial laser systems, and TeraXion has deployed tens of thousands of HPR units for over a decade.
- **Partnership:** TeraXion will work through the entire product development process, from prototyping to mass production.
PowerSpectrum™ – HPR High-power reflector

High-power fiber laser with PowerSpectrum™ HPR reflectors

![Diagram of fiber laser with TeraXion HPR reflectors and Pump Combiner]

**Standard Configuration Specifications**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>High reflector</th>
<th>Low reflector</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center wavelength at room temperature&lt;sup&gt;(1)(2)&lt;/sup&gt;</td>
<td>1060 to 1080</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Wavelength mismatch (low relative to high reflector)</td>
<td>≤0.2</td>
<td></td>
<td>nm</td>
</tr>
<tr>
<td>Reflection bandwidth</td>
<td>0.5 to 5.0 at 95%</td>
<td>0.2 to 3.0 at 50 %</td>
<td>nm</td>
</tr>
<tr>
<td>Reflectivity</td>
<td>≥99.5</td>
<td>6 to 50</td>
<td>%</td>
</tr>
<tr>
<td>Pigtail length (on each side)</td>
<td>1</td>
<td></td>
<td>m</td>
</tr>
<tr>
<td>Packaging</td>
<td>Recoated or TeraXion’s heat dissipation package</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>RoHS compliant</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Other wavelength ranges available upon request. Contact TeraXion for more detail.
<sup>(2)</sup> Room temperature ± 20 °C to 23 °C

**Standard Fiber Types**<sup>(3)</sup>

<table>
<thead>
<tr>
<th>Cladding Diameter</th>
<th>Standard Power Handling&lt;sup&gt;(4)&lt;/sup&gt;</th>
<th>Extended Power Handling&lt;sup&gt;(4)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pump Power</td>
<td>Signal Power</td>
</tr>
<tr>
<td>125 μm</td>
<td>400 W</td>
<td>300 W</td>
</tr>
<tr>
<td>250 μm</td>
<td>1 000 W</td>
<td>700 W</td>
</tr>
<tr>
<td>400 μm</td>
<td>1 500 W</td>
<td>1 100 W</td>
</tr>
<tr>
<td>500 μm</td>
<td>2 500 W</td>
<td>1 800 W</td>
</tr>
</tbody>
</table>

<sup>(3)</sup> Other fiber types available upon request. Contact TeraXion for more detail.
<sup>(4)</sup> Power handling specifications are met when operating temperature is maintained between 15 °C and 40 °C
Use the chart below when ordering your customized item

<table>
<thead>
<tr>
<th>HFR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

**Nomenclature options**

1  = Grating type
   HR = High reflector
   OC = Output coupler (low reflector)

2  = Center wavelength (nm)

3  = Bandwidth (nm)

4  = Back reflection (%)

5  = Fiber Supplier and dimensions\(^{(1)}\) (μm)

6  = Fiber cladding
   S = Single clad
   D = Double clad
   T = Triple clad

7  = Fiber type
   P = PM fiber
   N = Non-PM fiber

8  = Package
   L = Low index acrylate
   P = Heat dissipation package

9  = Power handling (W)

10 = Pigtail length (Cavity side pigtail length / outside or cavity pigtail length)
    1 = 0.5 m / 0.5 m
    2 = 1.0 m / 1.0 m
    3 = 1.5 m / 1.5 m
    C = Custom

\(^{(1)}\) X = fiber supplier, X/xxx = ØCore / ØFirst cladding, if needed, please specify your preferred fiber parameters and supplier. Otherwise, TeraXion will suggest the best option.