Optical Fiber Assemblies

Mode Conditioning Patch cords

Features

- Increased transmission
- Bandwidth by as much as 4 times
- Reduced modal noise
- Low insertion loss (< 1dB)
- Easy installation
- Various connector options

Vibration (Mated Pair):
(IEC 61300-2-1)
10-55 Hz, 1.5mm P to P
=0.3dB Change

Mating Durability:
(IEC 61300-2-2)
1000 mating cycles
Clean every 25
< 0.2 dB Change

Temperature Cycling:
(IEC 61300-2-48)
-40°C to +75°C, 40 cycles
=0.2dB Change

High Temperature:
(IEC 61300-2-18)
75°C for 96 hours
=0.2dB Change

Damp Heat:
(IEC 61300-2-19)
50°C at 95% RH, 96 hours
=0.2dB Change

Operating Temperature:
-40°C to +85°C

It is known that multimode optical fiber links that use laser based transmitters may be limited in bandwidth to values less than half those of the over-filled launch bandwidth. The bandwidth is very low in the case of centre-launch condition. SofTEK mode conditioning patchcords are specifically designed for launching your gigabit signal into the conventional 62.5/125 or 50/125 fiber with very high bandwidth. The SofTEK mode conditioning patchcords can improve the transmission bandwidth by 3 to 4 times and also greatly reduces modal noise.

Typical Application

Today’s Gigabit Ethernet Switches use VCSEL’s, as the old technology LED emitters can not produce the signals required in these high bandwidth applications. The new mode conditioning assemblies are designed for use in 62.5/125 or 50/125 multimode fiber optic cabling systems, where these assemblies allow long wavelength 1300nm signals to be transmitted over good quality fiber at distances of up to 550m. The VCSEL devices used in Gigabit Ethernet applications are based on a singlemode launch condition and operate over both singlemode and multimode fiber.

Differential mode delay occurs when the transmitter device launches a singlemode laser signal into the centre of the multimode fiber, resulting in the transmission of multiple signals and high attenuation. Such signals can confuse the receiver device, with resultant limitations on the operating bandwidth and especially on the drive distances of Gigabit Ethernet. The 62.5/125 fiber will typically only allow a distance of 220-270m for Gigabit Ethernet using lower cost lasers operating at the 850nm. SX wavelength and longer distance requirements have to be met by the use of 1300nm electronics in conjunction with a Mode-Conditioning launch lead. The SofTEK mode conditioning cable assembly eliminates differential mode delay by moving the singlemode launch to an offset position away from the centre of the fiber.
**Optical Fiber Assemblies**

### Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>62.5μm MMF</th>
<th>50μm MMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating wavelength</td>
<td>1310nm</td>
<td></td>
</tr>
<tr>
<td>Maximum insertion loss</td>
<td>0.5dB</td>
<td></td>
</tr>
<tr>
<td>Coupled power ratio (CPR)</td>
<td>28 to 40dB</td>
<td>12 to 20dB</td>
</tr>
<tr>
<td>Back reflection S/M channel</td>
<td>30dB</td>
<td></td>
</tr>
<tr>
<td>M/M channel</td>
<td>20dB</td>
<td></td>
</tr>
<tr>
<td>Connector finish:</td>
<td>PC or APC</td>
<td></td>
</tr>
<tr>
<td>Ferrule radius of curvature:</td>
<td>25mm to 10</td>
<td></td>
</tr>
<tr>
<td>Fiber height:</td>
<td>-50 to 50nm</td>
<td></td>
</tr>
<tr>
<td>Maximum angular offset</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sheath colour:</td>
<td>Orange (yellow for SM leg)</td>
<td></td>
</tr>
</tbody>
</table>

### Connectors available

- Types: FC, FC/APC, ST, SC, SC/APC, MT-RJ, MU
- Length: 2000mm ± 10mm
- Other lengths available to order

For full information on the SofeTEK connectors used on the SofeTEK patch cords, please contact the address below for a connector data sheet.

**Intermateability**

- Optically and mechanically compatible with all equivalent connectors.
- Compliant with IEC 874-14.

**Product Packaging**

- Each patch cord is packaged individually and individually identified for traceability, test certification is supplied for each assembly.

### Mode Conditioning Principle

![Diagram of Mode Conditioning Principle]

### Ordering Information

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<tr>
<th>Connectors End 1</th>
<th>Connectors End 2</th>
<th>Fiber Size</th>
<th>Length (mtrs)</th>
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<tbody>
<tr>
<td>PC</td>
<td>PC</td>
<td>62 - 62.5</td>
<td>1Mtr</td>
</tr>
<tr>
<td>SC</td>
<td>SC</td>
<td>50 - 50.125</td>
<td>2Mtr</td>
</tr>
<tr>
<td>ST</td>
<td>LC</td>
<td>MT-RJ</td>
<td>3Mtr</td>
</tr>
<tr>
<td>LC</td>
<td>ST</td>
<td>MJ E2030</td>
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**Sofetek link**

Tel: 86-755-25613694 // Fax: 86-755-25613697 // [www.sofeTEK.com] // Email: enquiries@sofetek.com
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Mode Conditioning Principle

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