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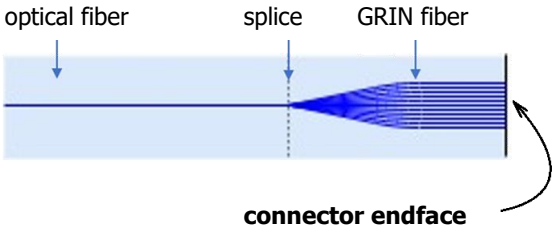
# BE-SMF – Beam Expander

## Description

The optical interconnect cable (module) BE-SMF Beam Expander contains two patchcords, which are equipped with FC/PC connectors on one side, containing two opposing beam expanders for single-mode optical fibers. The transmission system includes an optical interconnect module (two jumpers) containing two FC/PC connectors (at the connection point), in which the same type of GRIN lens is integrated.

The optical interconnect module contains a one-meter-long section of single-mode optical fiber, to which a fiber GRIN lens (beam expander) is spliced.

Patch cables with FC/PC connectors operate on the principle of contact expansion technology of the mode field MDF (Mode Field Diameter), which achieves a reduction in power density at the connector interface. Lower energy density eliminates damage to the surface of the optical fiber, especially due to micrometric impurities, which heat up strongly at higher optical signal levels. The principle of operation of the beam expander is shown in figure below:




principle of operation of a beam expander (BE-SMF) integrated inside an FC/PC connector.

The BE-SMF Beam Expander is intended for systems operating with high levels of optical power, it is designed for high-performance applications with optical power up to 3 W.

## Features:

- increase in optical power in optical fiber networks - increase in thermal load on the connector face
- enlargement of the optical fiber core = greater MFD (Mode Field Diameter) value
- reduction in power density per unit area on the connector face
- possibility of transmitting signals with a higher optical power level - increase up to 16x compared to the power load
- long-term test at 6 W, 2000 hrs (SM)
- connector with low insertion loss (IL)
- Ultra polish (UPC) technology to increase the return loss (RL)

## Application

- Networks with EDFA amplifiers
- PoF – powering connected devices over fiber
- Remote optical sensor systems
- High-power laser applications used in medical and industrial fields.
- And more

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## Specification

| | |
|---|---|
| Optical interface of HPF connector | |
| Grade A+ ferrules with diameter tolerance | < 0.2 µm |
| Eccentricity | < 3.5 µm |
| Increased Mode field Diameter | < ca. 35 µm |
| Ultra polish | with 100% Endface inspection |
| Available as PC 0° version | |
| | |
| Geometrical parameters of connector endface | |
| Ferrule radius | 10÷20 mm |
| Core Apex | 50 µm |
| Fiber Height (undercut, protrusion) | -50÷200 nm |

## Ordering code

**FCPC-BE - XX SM - J - XX**

FC/PC connector with Beam Expander

**length [m]**

**J** jumper (patchcord)

**XX - diameter of cable, fiber**

**09** fiber Ø 0.9 mm

**28** cable Ø 2.8 mm

**SM** SM 9/125 µm