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HPF - High Power Connector

Description

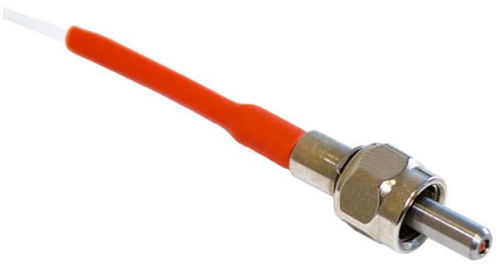
Standard telecommunications and data transmission networks that use optical fiber cables for signal transmission operate with optical radiation power levels in the order of units to tens of mW. The optical power of the transmitted signal usually does not exceed the absolute value of 20 dBm, which represents 100 mW. SM single mode or MM multimode fibers are usually used for the transmission of these signals, and a whole range of optical connectors operating on the PC, physical contact principle are then used for their connection. The connection for signal transmission must be ensured by core-to-core alignment, i.e. on an area with dimensions of up to 10 µm single mode and 50/62,5 µm multimode.

However, there are a number of applications that require a higher level of optical signal, which, with a small connection area, leads to a significant increase in power density per unit area:

- 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

The HPF optical connector is intended for systems operating with high levels of optical power, it is designed for high-performance applications with optical power up to 6 W for SM and 10 W for MM fibers

The connector works on the principle of physical contact (PC) connection technology with an increased mode field diameter to reduce power density at the ferrule face of the connected connectors. A part of the standard fiber is connected to a fiber with a graded refractive index, which increases the fiber core diameter and reduces the power density at the connector interface. Lower energy density eliminates damage to the surface of the optical fiber, mainly due to micrometric impurities that heat up strongly at higher optical signal levels.



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)

OPTOKON, a.s. reserves the right to make changes, without notice, to the products described in this document, in the interest of improving design, operational function

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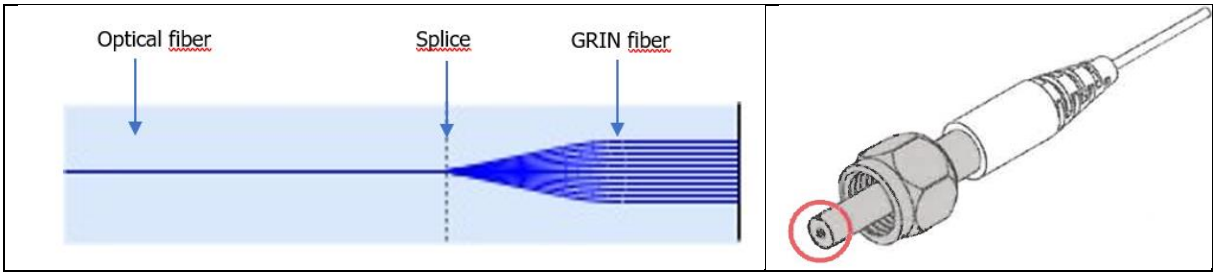
Specification

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	
Connector parameters	**Multimode**	**Single mode**
Insertion loss (IL), IEC 61300-3-4	≤ 0.5 dB	≤ 0.5 dB
Return loss (RL), IEC 61300-3-6	> 30 dB	> 50 dB
Operating temperature	-10 to +50 °C	
Connection	physical contact	
Lock mechanism	coupling nut	
Ferrule material	metal	

The solution is to use a piece of gradient index or single mode fiber to collimate the light beam. This way the expanded beam system can be integrated in an appropriate ferrule, as displayed below:



Ordering code

XXX-HPF - XX XXX - XX - XX

XXX HPF connector type
single mode
UPC FC/UPC connector
multimode
PC FC/PC connector
SMA SMA connector

XX - diameter of cable, fiber
09 fiber Ø 0.9 mm
28 cable Ø 2.8 mm

XXX - type of fiber
OM1 MM 62.5/125 µm
OM2 MM 50/125 µm
SM SM 9/125 µm

pigtail or jumper
J jumper (patchcord)
PT pigtail tight buffered
strip in one shot 0.5-2 cm

length [m]

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