FIBRAIN®
Fiber Optic Solutions

OM4+/OM5

Future technology - multicore fiber resistant to bending

Innovative 40Gb/s and 100 Gb/s multicore fiber, resistant to bending

At present, multimode fiber 50um/ 125um/ 242um OM4 resistant to bending (radius bending< 10mm) comply with IEC 60793-2-10 guarantee 10Gb/s at 550m and 850nm wavelength and 1Gb/s at 1100m. These fibers can be characterized by 3500MHzkm bandwidth, whereas for 100Gb/s systems for 850 wavelength and 500MHzkm for 1300 nm. The bandwidth is 4700 Mhz/km. OM4 meets high requirements and needs set to state-of-the-art technologies and are optimized to be used in cheap and fast VCSEL lasers. Typical attenuation values of OM4 fibers reach =< 2.3 dB/km for 850 nm and =<0.5 dB for 1300 and attenuation loss values with 7.5 mm radiuses for the fibers are =< 0.2 dB =< 0.5 dB for 850 nm and 1300 nm.

Since 2012 multicore fibers OM4+/ OM5 are available and they comply or even exceed IEC 60793-2-10 A1a.3. type. Therefore aforementioned fibers have been specifically designed for the fastest systems like 40 Gb/s and 100 Gb/s which use VCSEL lasers. In the systems of > 25 Gb and a distance > 150m in modal and chromatic dispersion they are growing in importance and should not be neglected. New and innovative fibers OM4+/OM5 can be characterized by such effective bandwidth (EB) which reflects mutual influence.

Effective dispersion reaches >4700MHzkm. Thanks to OM4+/ OM5 provides the possibility to construct faster systems with VCSEL laser source, which guarantee transmission in longer distances. Therefore, thanks to high bending resistance, these systems can also be applied in more complex systems. Such fibers with high bending resistance guarantee cable design with smaller dimensions, which significantly reduces length of cables and increases a volume of cable in a limited area. Consequently, these cables are specifically designed for distribution points or LAN server rooms.

Furthermore, these fibers guarantee high reliability of the available transmission systems while the fiber attenuation does not exceed 3,0dB/km for 850 nm wavelength.

ELMAT
DOSTAWCA TELEINFORMATYKI

Optic characteristics

Max. attenuation	
1300 nm wavelength	≤ 0.5 dB/km
850 nm wavelength	≤ 2.3 dB/km
Chromatic dispersion	
Zero-dispersion wavelength (λ0)	1295 nm ≤ λ0 ≤ 1340 nm
Curve gradient for zero dispersion (λ0)	
1295 nm ≤ λ0 ≤ 1310 nm	≤ 0.105 ps/nm^2 km
1310 nm ≤ λ0 ≤ 1340 nm	≤ 0.000375 ps/nm^2 km
Transmission length vs. transmission speed	
40GBASE-SR4 / 100GBASE-SR10	200 m
10GBASE-SR	600 m
1GBASE-SR	1200 m
Mininal bandwidth	
Modal bandwith	
850 nm wavelength	3500 MHz.km
1300 nm wavelength	500 MHz.km
Effective modal bandwidth	
850 nm wavelength	4700 MHz.km
Effective bandwidth	
850 nm wavelength	5000 MHz.km
Attenuation of macro-bending radius	
2 loops of 7.5 mm radius	for 850 nm / 1300 nm ≤ 0.2 / ≤ 0.5 dB
2 loops of 15 mm radius	for 850 nm / 1300 nm ≤ 0.1 / ≤ 0.3 dB

Geometry characteristics

Core diameter	50 ± 2.5 µm
Coat diameter	125.0 ± 1.0 µm
Coat ovalness	≤ 0.7 %
Centricity mistake margin core/coat	≤ 1.0 µm
Original cover diameter	242 ± 5 µm
Original cover diameter mistake margin	≤ 10 µm

Physical characteristics

Level of sifting quality test	100 kPsi (>0.69 GPa)
Strength range for coat removal	≥ 1.3 N < 8.9 N

Environmental characteristics

(for 1310, 1550 & 1625 nm)

Thermic cycle (-60° + 85° C)	≤ 0.1 dB/km
Aging in high temperatures (85 ± 2° C)	≤ 0.1 dB/km

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