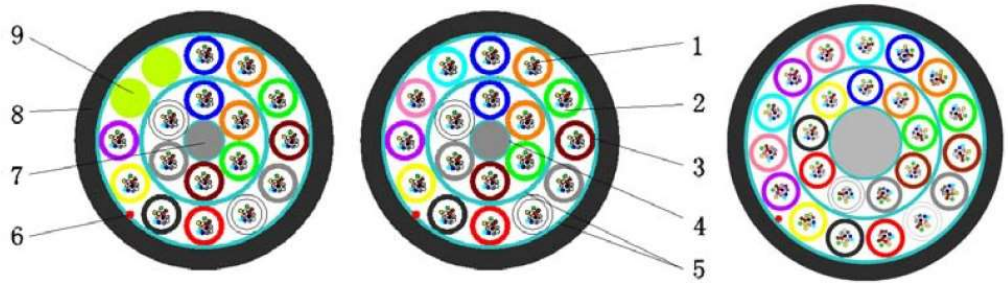
LUMIFIBER FIBER OPTIC SOLUTION

MICRO AIR BLOWN FIBER OPTIC CABLE



1. Optical Fibre
2. Jelly
3. Loose Tube
4. Water Blocking Yarn
5. Water Blocking Kevlar
6. Ripcord
7. FRP
8. HDPE Sheath
9. Filled String

CABLE SPECIFICATION

CABLE TYPE		LAYER CABLE		
FIBER COUNT		192	216	288
Number of Loose Tube		6 + 10	6 + 12	9 + 15
Number of filler string		0 + 2	0	0
Number of fiber / tube		12		
Water blocking method	FRP	Water Blocking Yarn		
	Cable Core	Water Blocking Kevlar		
Thickness of HDPE sheath		Nominal: 0.50mm, Average: 0.45mm, Minimum: 0.40mm		
Overall Diamter		7.8 ± 0.2mm	7.8 ± 0.2mm	9.4 ± 0.2mm
Weight		55kg/km	55kg/km	78kg/km
Max. Tensile Strength		500N	500N	1000N
Max. Crushing Resistance		800N / 100mm		
Min. Bending Radius - Static		12 outer Ø		
Min. Bending Radius - Dynamic		20 outer Ø		
Fiber Attenuation (SM)		0.35dB/km max @ 1310nm 0.22dB/km max @ 1550nm		
Temperature Range		Storage -40°C to 70°C; Installation – 10°C to 40°C; Operation -20°C to 70°C		

BLOWING PERFORMANCE

Blowing Tool	Typical Blowing Length		
PLUMETTAZ: PR-140, MiniJet-400 etc. Air Pressure: 15Bar	Fiber Count	Duct Type 12.0 / 10.0nm	Duct Type 14.0 / 12.0nm
	192 – 216 Fiber Core	1500nm	/
	288 Fiber Core	/	1500nm

FIBER AND LOOSE TUBE IDENTIFICATION

NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Color	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua	Violet	Pink	Aqua

192 Fibers: inner layer 1~6 colors, outer layer 1~10 colors.

216 Fibers: inner layer 1~6 colors, outer layer 1~12 colors.

288 Fibers: inner layer 1~9 colors, outer layer 1~15 colors.

MAIN MECHANICAL & ENVIRONMENTAL PERFORMANCE TEST

ITEM	TEST METHOD	ACCEPTANCE CONDITION
Tensile Strength IEC 60794-1-2-E1	Load: Larger of two values: 1km cable weight or 500N Length of cable: about 50m Load Time: 1min	Fiber strain ≤ 0.6% No fiber break and no sheath damage.
Crush Test IEC 60794-1-2-E3	Load: Short term crush Load time: 5min	Loss change ≤ 0.1 dB @ 1550 nm No fiber break and no sheath damage.
Impact Test IEC 60794-1-2-E4	Points of impact: 3 Times of per point: 1 Impact energy: 1J (with 300mm striking radius) 0.3J (with 10mm striking radius)	Loss change ≤ 0.1 dB @ 1550 nm No fiber break and no sheath damage.
Repeated Bending IEC 60794-1-2-E6	Bending radius: The larger of two values: 300mm or 40 x cable diameter No. of cycle: 25	Loss change ≤ 0.1 dB @ 1550 nm No fiber break and no sheath damage.
Torsion IEC 60794-1-2-E7	Length: 2m Twist angle: ±180° No. of cycle: 5	Loss change ≤ 0.1dB@1550nm No fiber break and no sheath damage.
Cable bend IEC 60794-1-2-E11	Diameter of mandrel: 20 x OD Number of turns: 4 Number of cycles: 3	Loss change ≤ 0.1 dB @ 1550 nm No fiber break and no sheath damage.
Compound flow IEC 60794-1-2-E14	Length: 30cm Temperature: 70°C ±2°C Period: 24h	Weightiness of cable specimens ≤ 0.05g
Water Penetration IEC 60794-1-2-F5B	Height of water: 3m Sample length: 1meter Time: 24h	No water leak from the cable core of the opposite end
Temperature Cycling IEC 60794-1-2-F1	Temperature: -30°C to +60°C Time of each step: 12h Number of cycle: 2	Loss change ≤ 0.1 dB @ 1550 nm No fiber break and no sheath damage.
Other Parameters	According to IEC 60794	

Remark: "No attenuation changes" is considered as the attenuation changes ≤ 0.05 dB.

CHARACTERISTICS OF OPTIC FIBER

Fibre information	G652D fibre	G657A1 fibre	G657A2 fibre	G657A2 (200μm) fiber
Mode field diameter (1310nm)	9.2 μm ±0.4 μm	8.6 μm ±0.4 μm	8.6 μm ±0.4 μm	8.6 μm ±0.4 μm
Mode field diameter (1550nm)	10.4 μm ±0.5 μm	9.6 μm ±0.5 μm	9.6 μm ±0.5 μm	9.6 μm ±0.5 μm
Cladding diameter	125 μm ±0.8 μm	125 μm ±0.7 μm	125 μm ±0.7 μm	125 μm ±0.7 μm
Coating diameter	245 μm ±7 μm	245 μm ±5 μm	245 μm ±5 μm	200 μm ±10 μm
Cladding non-circularity	≤ 0.7 %	≤ 0.8 %	≤ 0.7 %	≤ 0.7 %
Core Cladding Concentricity Error	≤ 0.6 μm	-	-	-
Cut off wavelength of cabled fibre (λcc)	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm
Attenuation at 1310nm (after cabling)	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km
Attenuation at 1340nm (after cabling)	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km
Attenuation at 1383nm (after cabling)	-	≤ 0.35 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km
Attenuation at 1550nm (after cabling)	≤ 0.23 dB/km	≤ 0.22 dB/km	≤ 0.22 dB/km	≤ 0.22 dB/km
Attenuation at 1625nm (after cabling)	≤ 0.25 dB/km	≤ 0.25 dB/km	≤ 0.25 dB/km	≤ 0.25 dB/km
Attenuation vs Wavelength @ 1285 - 1330 nm (max)	0.04 dB	-	-	0.05 dB
Attenuation vs Wavelength @ 1525 - 1575 nm (max)	0.03 dB	-	-	0.04 dB
Bending loss at 1550nm (100 turns, 30mm radius)	≤ 0.05 dB	-	-	-
Bending loss at 1550nm (1 turn, 10mm radius)	-	≤ 0.75 dB	≤ 0.1 dB	≤ 0.1 dB
Bending loss at 1625nm (1 turn, 10mm radius)	-	≤ 1.5 dB	≤ 0.2 dB	≤ 0.2 dB
Dispersion in the range 1288 to 1339nm	≤ 3.5 ps/(nm/km)	≤ 3.5 ps/(nm/km)	≤ 3.5 ps/(nm/km)	-
Dispersion at 1550nm	≤ 18 ps/(nm/km)	≤ 18 ps/(nm/km)	≤ 18 ps/(nm/km)	-
Zero dispersion wavelength	-	1300~1322 nm	1300~1322 nm	1300~1324 nm
Dispersion slope at zero dispersion wavelength	≤ 0.090 ps/(nm²/km)	≤ 0.091 ps/(nm²/km)	≤ 0.091 ps/(nm²/km)	≤ 0.091 ps/(nm²/km)

CABLE SHEATH AND MARKING

Unless otherwise specified, the cable sheath marking shall be in accordance with follows:
Contents: Brand, the type of cable, the year of manufacture, length
Marking Interval: 1m

PACKAGING AND MARKING

1. Reel Length
   Standard reel length: 2km/reel, other length is also available.
2. Labelling
   The direction of rotation of the colour scheme is shown by marking the clockwise and anti-clockwise ends with red and green adhesive tape respectively

   The markings are on both sides of the flanges as follows:
   A. Cable Type/Size
   B. Cable Length
   C. Gross Weight.
   D. Brand
   E. Shipping mark.
   F. Cable Packing

Both cable ends are provided with protection against water penetration and firmly secured to the drum, so the cable cannot move, and the turns cannot slide when it moves, handled, or laid. The inner end has at least 3 meters of accessible length to perform reception tests.

STORAGE
Recommended storage place: warehouse, not in the open air.

ORDERING INFORMATION

PRODUCT NUMBER	Fiber core number	Fiber type
LM-MBFC	192 = 192 core 216 = 216 core 288 = 288 core	SM = Single Mode OS2