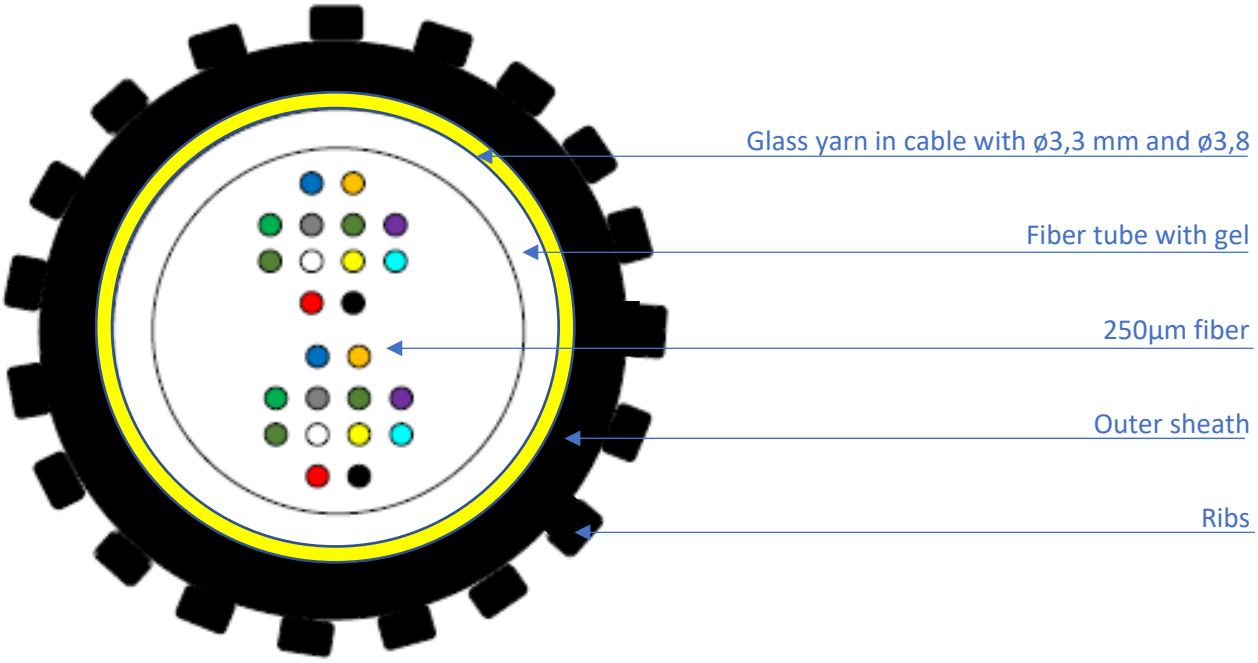
MDC MICRO DUCT CABLE

LOW FRICTION BLOW CABLE FOR CUSTOMER ACCESS



1. APPLICATION / CONSTRUCTION

Identification	MDC - 2/4/12/24 ITU-T G.657A1/ G.657A2		
Application	Micro blow cable, customer access		
Configuration	- Central loose tube with up to 24 optical fibers, filled with thixotropic compound - Outer sheath: HDPE, black, halogen free - One ripcord under the sheath (cable with ø3.3mm and ø3.8mm) - Glass yarn as strength member (cable with ø3,3 and ø3,8mm) - Grooves		
Temperature range	Storage and transport -40 to +70°C	Installation -20 to +50°C	Operation -30 to +70°C
Standards	IEC 60793-1, IEC 60793-2, IEC 60794-5		

2. DIMENSIONS

2.1

Number of fibers	/	2	4
Outer diameter (±0,2)	mm	1,8	
Suitable Micro duct, ID from	mm	3,5	
Weight/km	kg	4,4	

2.2

Number of fibers	/	2	4
Outer diameter (±0,2)	mm	2,0	
Suitable Micro duct, ID from	mm	3,5	
Weight/km	kg	5	

2.3

Number of fibers	/	2	4	12	24
Outer diameter (±0,2)	mm	3,3			
Suitable Micro duct, ID from	mm	5,5			
Weight/km	kg	10			

2.4

Number of fibers	/	2	4	12	24
Outer diameter (±0,2)	mm	3,8			
Suitable Micro duct, ID from	mm	5,5			
Weight/km	kg	13			

3. MECHANICAL PROPERTIES

Max tensile load	20N (ø1,8mm, ø2,0mm and ø2,5mm), 100N (ø3,3mm and ø3,8mm)
Crush resistance / 10 cm	100N
Bending radius (Dynamic)	20 x OD
Bending radius (Static)	10 x OD

4. MARKING

Fiber colors	1	2	3	4	5	6	7	8	9	10	11	12
	White	Red	Yellow	Green	Blue	Grey	Brown	Black	Violet	Aqua	Orange	Pink
	13	14	15	16	17	18	19	20	21	22	23	24
	White	Red	Yellow	Green	Blue	Grey	Brown	Natural	Violet	Aqua	Orange	Pink

Remark: 13~24th fiber color is same as 1~12 fiber with black ring, except 20th fiber which is natural with black ring

Outer Sheath: Black, ink jet white print marking with 1-meter intervals as follows:

Alloptix/Fiberworks	**MDCzz (n)G.657Ax**	**<batch ID>**	**<meter marking>**

zz: Cable diameter, (n): Fiber qty. x: 1=G.657A1, 2=G.657A2

5. OPTICAL FIBER

5.1 G.657.A1/G.652.D

Standard	ITU-T G.657.A1/G.652.D		
Optical	Fiber attenuation, cabled	@ 1310 nm: ≤0.36dB/km	@ 1383 nm: ≤0.36dB/km
		@ 1550 nm: ≤0.22dB/km	@ 1625 nm: ≤0.24dB/km
	Mode Field Diameter (MFD)	@ 1310 nm: 9,2 ±0.4µm	
	Zero dispersion wavelength	1300~1324 nm	
	Zero dispersion slope	≤0.092 ps/nm² ·km	
	Polarization mode dispersion (PMD)	≤0.1 ps/√km	
	Cut-off wavelength	≤1260 nm	
	Macro bending loss 10 turns ø30mm 1 turn ø20mm 1 turn ø15mm	@1550 nm: ≤0.03 dB ≤0.1 dB ≤0.5 dB	@1625 nm: ≤0.1 dB ≤0.2 dB ≤1.0 dB
Geometric	Outer diameter (uncolored)	245 ± 10 µm	
	Cladding diameter	125 ± 0.7 µm	
	Core/clad concentricity error	≤0.6 µm	
	Cladding non-circularity	≤1.0 %	
Mechanical	Proof stress	≥0.69 Gpa	

5.2 G.657A2

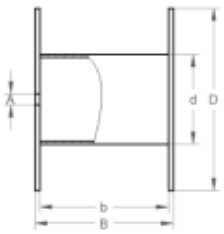
Standard	ITU-T G.657.A2		
Optical	Fiber attenuation, cabled	@ 1310 nm: ≤0.36dB/km	@ 1383 nm: ≤0.36dB/km
		@ 1550 nm: ≤0.22dB/km	@ 1625 nm: ≤0.24dB/km
	Mode Field Diameter (MFD)	@ 1310 nm: 8,6 ±0.4µm	
	Zero dispersion wavelength	1300~1324 nm	
	Zero dispersion slope	≤0.092 ps/nm² ·km	
	Polarization mode dispersion (PMD)	≤0.2 ps/√km	
	Cut-off wavelength	≤1260 nm	
	Macro bending loss 10 turns ø30mm 1 turn ø20mm 1 turn ø15mm	@1550 nm: ≤0.03 dB ≤0.10 dB ≤0.50 dB	@1625 nm: ≤0.10 dB ≤0,20 dB ≤1,00 dB
Geometric	Outer diameter (uncolored)	245 ± 10 µm	
	Cladding diameter	125 ± 0.7 µm	
	Core/clad concentricity error	≤0.5 µm	
	Cladding non-circularity	≤1.0 %	
Mechanical	Proof stress	≥0.69 Gpa	

6. TEST METHODS

Test	Conditions	Acceptance criteria
Tensile strength IEC 60794-1-2 E1	Tensile load: see Point 3 Sample length: ≥ 50 m Test duration: 1 min	- Δα reversible - No damage
Crush resistance IEC 60794-1-2 E3	Crush: see Point 3 Test duration: 2 min Number of tests: 3	- Δα reversible - No damage
Impact IEC 60794-1-2 E4	Impact Energy: 15J, R=10 mm Impact points: 3 Impact number: 1	- Δα reversible - No damage
Repeated bending IEC 60794-1-2-E6	Bending radius: 20x cable ø Load: 1kg Cycles: 30	- Δα reversible - No damage
Torsion IEC 60794-1-2 E7	Sample length: 2 m: Angles: ± 180° Cycles: 10 cycles	- Δα reversible - No damage
Bend IEC 60794-1-2 E11A	Bending radius: 10x cable ø Bends: 4 Cycles: 3	- Δα reversible - No damage
Temperature cycling IEC 60794-1-2 F1	Steps: -40°C~+70°C 4 hours at each temperature step Cycles: 2	- Δα ≤ 0.15 dB/km - Attenuation reversible - No damage
Water penetration IEC 60794-1-2 F5	Sample length: 3 m Water column height: 1 m Test duration: 24 h	- No water leakage
Filling compound flow IEC 60794-1-2-E14	Sample length: 0.2 m 60°C Test Duration: 24 h	- No compound flow

All optical measurement at 1550nm

7. LOGISTICS

Cable type	/	4 km drum, plywood -1%/+3%	
2/4F, ø1.8mm	Dimension Weight	D52*d40*B33 26 kg	 A=80 mm D*d*B in cm
2/4F, ø2.0mm		D58*d40*B33 28 kg	
2/4/24F, ø2.5mm		D62*d40*B40 38 kg	
2/4/24F, ø3.3mm		D57*d40*B53 55 kg	
2/4/24F, ø3.8mm		D62*d40*B53 67 kg	

Dimensions is including protection. Indicative values, actual delivered drum size and weight may deviate. Cable ends are sealed with cap. The plywood drum should be stored in dry condition and in no raining area.

8. ORDERING INFORMATION

Elnr.	Product code	Product	Fiber qty	Fiber type	Category (fiber)
1025403	K-BU-S-7A1-1.8-G2	G2 MDC ø1,8mm, G.657.A1/G.652.D	2	SM 9/125	OS2
1025404	K-BU-S-7A1-1.8-G4	G4 MDC ø1,8mm, G.657.A1/G.652.D	4	SM 9/125	OS2
	K-BU-S-7A1-2.0-G2	G2 MDC ø1,8mm, G.657.A1/G.652.D	2	SM 9/125	OS2
	K-BU-S-7A1-2.0-G4	G4 MDC ø1,8mm, G.657.A1/G.652.D	4	SM 9/125	OS2
1025405	K-BU-S-7A1-2.5-G2	G2 MDC ø2,5mm, G.657.A1/G.652.D	2	SM 9/125	OS2
1025406	K-BU-S-7A1-2.5-G4	G4 MDC ø2,5mm, G.657.A1/G.652.D	4	SM 9/125	OS2
1025407	K-BU-S-7A1-2.5-G24	G24 MDC ø2,5mm, G.657.A1/G.652.D	24	SM 9/125	OS2
1025408	K-BU-S-7A1-3.3-G2	G2 MDC ø3,3mm, G.657.A1/G.652.D	2	SM 9/125	OS2
1025409	K-BU-S-7A1-3.3-G4	G4 MDC ø3,3mm, G.657.A1/G.652.D	4	SM 9/125	OS2
1025410	K-BU-S-7A1-3.3-G12	G12 MDC ø3,3mm, G.657.A1/G.652.D	12	SM 9/125	OS2
1025411	K-BU-S-7A1-3.3-G24	G24 MDC ø3,3mm, G.657.A1/G.652.D	24	SM 9/125	OS2
1025412	K-BU-S-7A1-3.8-G2	G2 MDC ø3,8mm, G.657.A1/G.652.D	2	SM 9/125	OS2
1025413	K-BU-S-7A1-3.8-G4	G4 MDC ø3,8mm, G.657.A1/G.652.D	4	SM 9/125	OS2
1025414	K-BU-S-7A1-3.8-G12	G12 MDC ø3,8mm, G.657.A1/G.652.D	12	SM 9/125	OS2
1025415	K-BU-S-7A1-3.8-G24	G24 MDC ø3,8mm, G.657.A1/G.652.D	24	SM 9/125	OS2
	K-BU-S-7A2-1.8-G2	G2 MDC ø1,8mm, G.657.A2	2	SM 9/125	OS2
	K-BU-S-7A2-1.8-G4	G4 MDC ø1,8mm, G.657.A2	4	SM 9/125	OS2
	K-BU-S-7A2-2.5-G2	G2 MDC ø2,5mm, G.657.A2	2	SM 9/125	OS2

	K-BU-S-7A2-2.5-G4	G4 MDC ø2,5mm, G.657.A2	4	SM 9/125	OS2
	K-BU-S-7A2-2.5-G24	G24 MDC ø2,5mm, G.657.A2	24	SM 9/125	OS2
	K-BU-S-7A2-3.3-G2	G2 MDC ø3,3mm, G.657.A2	2	SM 9/125	OS2
	K-BU-S-7A2-3.3-G4	G4 MDC ø3,3mm, G.657.A2	4	SM 9/125	OS2
	K-BU-S-7A2-3.3-G12	G12 MDC ø3,3mm, G.657.A2	12	SM 9/125	OS2
	K-BU-S-7A2-3.3-G24	G24 MDC ø3,3mm, G.657.A2	24	SM 9/125	OS2
	K-BU-S-7A2-3.8-G2	G2 MDC ø3,8mm, G.657.A2	2	SM 9/125	OS2
	K-BU-S-7A2-3.8-G4	G4 MDC ø3,8mm, G.657.A2	4	SM 9/125	OS2
	K-BU-S-7A2-3.8-G12	G12 MDC ø3,8mm, G.657.A2	12	SM 9/125	OS2
	K-BU-S-7A2-3.8-G24	G24 MDC ø3,8mm, G.657.A2	24	SM 9/125	OS2