

ETK Kablo Technical Datasheet

SM-MLT-SA-SJ-(AY27)-72FO(6x12) Türksat
Single-mode, Multi Loose Tube, Single Armor, Single Jacket, Aramid Yarns with 2700 Newtons, 72 Optical Fiber Cores 6 Tube x 12 Optical Fiber Cores) Türksat



Fiber Optic Cable Image



• Not to scale.

Fiber Optic Cable Tube and Fiber Core Colors

Tube Color Scheme

1	2	3	4	5	6
Red	Yellow	Green	Blue	Violet	White
					

Fiber Optic Core Color Scheme

1	2	3	4	5	6	7	8	9	10	11	12
Red	Yellow	Green	Blue	Violet	Brown	Black	Orange	Rose	Slate	Aqua	Natural
											

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Characteristics	
Universal Fiber Optic Cable Designation Code	A-DF(ZN)(SR)2Y
Optical Fiber Core Type	SM: ITU-T G.652.D
Central Strength Member	
• Material	Reinforced Glass Fiber
• Diameter	2.5 mm (0.098 inch)
Total Optical Fiber Count	72
Tube Type	Multi Loose Tube
Tube	
• Material	Polybutylene Terephthalate (PBT)
• Diameter	2.26 mm (0.089 inch)
• Filling Compound Material	Thixotropic Jelly
Optical Fibers per Tube	12
Number of Tube Positions	6
Active Tube Count	6
Tube Assembly	
• Tube Layout	Tubes are stranded around the central strength member symmetrically.
• Stranding Type	Tubes are stranded with SZ stranding method.
Dielectric Tensile Strength Member	Aramid Yarn
Newton	≥ 2700 N·m (1991.42 lb·f)
Cable Filling Compound	
• Material	Jelly Filling
• Core Wrapping	Polyester Tape
Ripcord Material and Count	1 Aramid Ripcord
Armoring	
• Material	Copolymer Coated Corrugated Steel Tape
• Thickness	255 µm (10.039 thou)
Outer Jacket	
• Material	Orange MDPE UV Resistant.
• Thickness	P P : L W K D U P R U
Identification Tape	Polyester or paper identification tape under the cable core.
Cable Diameter (mm)	12.5 mm (0.492 inch)
Net Cable Weight (kg/km)	178.524 kg/km (119.96 lb/1000 ft)
Reel Length	4000 meters ± 5%.
Length Marking	With hot foil stamping or inkjet printing with one meter intervals.
Cable Printing Identification	Name of the manufacturer, year, type designation, length marking in meters. Example: (7 ' L J L W & R U H 1 R ! ' L . D E O R (7 . . D E O R 7 . 6) Ø Ø İ ; Q P H W H U V !

(7 ' L J L W & R U H 1 R ! ' L . D E O R (7 . . D E O R 7 . 6) Ø Ø İ ; Q P H W H U V !

• The parameters above are just for reference.
 • The images are for illustrative purposes only.

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Mechanical Characteristics (Cabled)			
Test	Reference Standard	Specified Value	Acceptance Criteria
Maximum Tensile Strength (Short Term)	IEC 60794-1-2-E1(A-B)	≥ 2700 N·m (1991.42 lb·f)	$\Delta\alpha \leq 0.05$ dB/km
Maximum Tensile Strength Long Term)	IEC 60794-1-2-E1(A-B)	≥ 900 N·m (663.81 lb·f)	$\Delta\alpha \leq 0.05$ dB/km
Repeated Bending	IEC 60794-1-2-E6	200 mm, 100 N, 5 cycles, 2 s	No sheath damage.
Crush Resistance	IEC 60794-1-2-E3	2200 N/100 mm (15 minutes)	$\Delta\alpha \leq 0.05$ dB, no damage.
Impact Resistance	IEC 60794-1-2-E4	D=300 mm, 3 impacts, R= 50 mm, 20 Joule hammer impact energy.	No sheath damage. No permanent change in attenuation.
Torsion	IEC 60794-1-2-E7	100N, +/- 1, 1000 mm, 5 cycles	$\Delta\alpha \leq 0.10$ dB, no damage.
Kink	IEC 60794-1-2-E18	300 mm loop, T=20°C	No kink shall occur.
Cable Bend	IEC 60794-1-2-E11 (A)	R=400 mm, 5 turns, 3 cycles, T=-15°C	$\Delta\alpha \leq 0.05$ dB, no damage.
Minimum Bend Radius (Installation)	IEC 60794-1-2-E11	187.5 mm (7.382 inch)	$\Delta\alpha \leq 0.05$ dB, no damage.
Minimum Bend Radius (Operation)	IEC 60794-1-2-E11	125 mm (4.921 inch)	$\Delta\alpha \leq 0.05$ dB, no damage.
Temperature Cycling	IEC 60794-1-2-F1	-30 °C to 60 °C (-22 °F to 140 °F)	Maximum 0.10 dB/km
Ageing	IEC 60794-1-2-E5	Accelerated Aging Test	Stripping force stability.
Water Penetration	IEC 60794-1-2-F5B	Sample=3 m, Water Column=1 m	No water leakage in 24 hours.

Chemical Characteristics	
RoHS	Free of hazardous substances according to RoHS regulation.
REACH	Safe to use according to REACH regulation.

Temperature Range (Cabled)	
Transportation	-40 °C to 80 °C (-40 °F to 176 °F)
Storage	-40 °C to 70 °C (-40 °F to 158 °F)
Installation	-40 °C to 80 °C (-40 °F to 176 °F)
Operation	-40 °C to 80 °C (-40 °F to 176 °F)

Fiber Optic Core Attenuations (Cabled)		
G.652.D	Property	Value
	Maximum attenuation at 1310 nm	0.36
	Maximum attenuation at 1550 nm	0.22

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Optical Fiber Core Specification
Low Water Peak Single-Mode Optical Fiber
Standard, ITU-T G.652.D (Uncolored Fiber)

Structural Specifications		
Fiber Materials		
• Core Material		Silica (SiO ₂) Doped with Germanium Dioxide (GeO ₂)
• Cladding Material		Pure silica (SiO ₂)
• Coating Material		Dual layers of UV-cured acrylate. The 3 rd layer of color-coded UV-cured Acrylate.
Dimensions		
• Mode Field Diameter	at 1310 nm	9.2 ± 0.4 ± m
	at 1550 nm	10.4 ± 0.5 ± m
• Cladding Diameter		125.0 ± 0.7 µm
• Coating Diameter (Uncolored)		240 ± 5 µm
Core Concentricity Error		≤ 0.6 µm
Cladding Non-circularity		≤ 0.7 %
Coating - Cladding Concentricity Error		≤ 12 µm
Fiber Curl Radius		≥ 4.0 m
Optical Specifications		
Attenuation		
• Attenuation Coefficient	Attenuation Coefficient at 1310 nm	≤ 0.34 dB/km
	Attenuation Coefficient at 1383 nm	≤ 0.32 dB/km ¹
	Attenuation Coefficient at 1550 nm	≤ 0.192 dB/km
	Attenuation Coefficient at 1625 nm	≤ 0.22 dB/km
• Attenuation vs. Wavelength ²	1285 nm – 1330 nm, ref. λ of 1310 nm	α ≤ 0.03 dB/km
	1525 nm – 1575 nm, ref. λ of 1550 nm	α ≤ 0.02 dB/km
• Macrobending ³	Φ=32 mm, 1 turn at 1550 nm	≤ 0.05 dB
	Φ=50 mm, 100 turns at 1310 nm	≤ 0.05 dB
	Φ=50 mm, 100 turns at 1550 nm	≤ 0.05 dB
	Φ=60 mm, 100 turns at 1625 nm	≤ 0.05 dB
• Point Discontinuity		No point discontinuity greater than 0.05 dB at either 1310 nm or 1550 nm in the OTDR trace.
Cut-off Wavelength		
• Cable Cut-off Wavelength λ _{cc}		λ _{cc} ≤ 1260 nm
Chromatic Dispersion		
• Chromatic Dispersion Coefficient	at 1285-1330 nm	≤ 3.5 ps/(nm.km)
	at 1550 nm	≤ 17 ps/(nm.km)
	at 1625 nm	≤ 22 ps/(nm.km)
• Zero-dispersion Wavelength λ ₀		1302nm ≤ λ ₀ ≤ 1324 nm
• Zero-dispersion Slope S ₀		S ₀ ≤ 0.089 ps/(nm ² .km)
Polarization Mode Dispersion (PMD) ⁴		
Uncabled Fiber PMD Coefficient		≤ 0.15 ps/√km
Link Design Value PMD ₀		≤ 0.06 ps/√km
Mechanical Specifications		
Proof Test ⁵		≥ 1% (100 kpsi or 0.7 GPa)
Environmental Specifications		
Environmental Specifications Induced attenuation at both 1310 nm, 1550 nm and 1625 nm		
Temperature Dependence ⁶	-60 °C to 85 °C	≤ 0.05 dB/km
Water Immersion	at 23 °C ± 2 °C	≤ 0.05 dB/km
Dry Heat ⁶	at 85 °C ± 2 °C	≤ 0.05 dB/km
Damp Heat	85 °C at 85% R. H.	≤ 0.05 dB/km
Performance Characteristics		
Core Diameter		8.3 µm
Zero Dispersion Wavelength		1315 nm
Zero Dispersion Slope		0.086 ps/(nm ² .km)
Refractive Index Profile		Matched clad, step index profile
Refractive Index Difference Δ		Δ=0.36%
Effective Group Index of Refraction N _{eff}	at 1310 nm	1.4675
	at 1550 nm	1.4681
Dynamic Stress Corrosion Susceptibility Parameter (n _d)		≥ 20
Coating Strippability F		1.3N ≤ F ≤ 8.9N

¹ The attenuation at 1383nm after hydrogen aging in accordance with IEC60793-2-50.

² The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength (λ) by more than the value α.

³ The induced attenuation due to fiber wrapped around a mandrel of a specified diameter (Φ).

⁴ This characteristic is guaranteed under the free tension condition only.

⁵ The entire optical fiber length is tested with regard to the tensile strength.

⁶ Reference Temperature = 23 °C.