Sales Catalog of HNK Telecommunication Products

Fiber Optic Cable

Optical Characteristics

The difference between single mode and multimode fiber mainly lies in fiber core diameter, wavelength, light source and bandwidth. Single mode fiber typical core diameter is 9μm. And multimode fiber core diameter is 50μm and 62.5μm typically. Due to the large core size if multimode fiber, some low-cost light sources like LEDs and VCSELs that works at the 850nm and 1310nm wavelength are used in multimode fiber cables. While the single mode often uses a laser or laser diodes to produce light injected into the cable. And the commonly used single mode fiber wavelength is 1310nm and 1550nm.

Single mode was for high-speed long-distance transmission and multimode was used for lower speed short-distance applications. The smaller the core diameter, the higher the fiber's bandwidth and the lower the attenuation (loss in dB per kilometer). The fiber's attenuation and bandwidth are also dependent on wavelength. Multimode 50 μm fiber had a lower cost and higher modal bandwidth than multimode 62.5 μm core fiber. A higher bandwidth fiber carries more data. Multimode fiber bandwidth is limited by its light mode and the maximum bandwidth at present is 28000MHz*km of OM5 fiber. OM5 optical fiber can transmit multiple wavelengths using Short Wavelength Division Multiplexing (SWDM) technology, while maintaining OM4 backward compatibility. If the network's transmission distances dictate the use of single-mode optical fiber, consider specifying bend-insensitive, zero water peak (ZWP), full spectrum fibers. See table below.

Fiber Type	Max. Attenuation (dB/km)				Min. Overfill Launch Bandwidth (Mhz.km)		Min. Link Distance (m)		
							1000 BASE-SX	10G BASE-SR	40&100Gigabit Ethernet
	850nm	1300nm	1310nm	1550nm	850nm	1300nm	850nm	850nm	850nm
OM1 62.5/125μm	≤2.7	≤0.6	-	-	≥200	≥600	500	-	-
OM2 50/125μm	≤2.4	≤0.6	-	-	≥700	≥500	750	150	-
OM3 50/125μm	≤2.4	≤0.6	-	-	≥1500	≥500	1000	300	100
OM4 50/125μm	≤2.4	≤0.6	-	-	≥3500	≥500	1100	550	150
OM5 50/125μm	≤2.4	≤0.6	-	-	≥3500	≥500	1100	600	200
G652D 9/125μm	-	-	≤0.34	≤0.20	-	-	-	-	-
G655 9/125μm	-	-	-	≤0.22	-	-	-	-	-
G657A1 9/125μm	-	-	≤0.35	≤0.21	-	-	-	-	-
G657A2 9/125μm	-	-	≤0.35	≤0.21	-	-	-	-	-
G657B3 9/125μm	-	-	≤0.35	≤0.21	-	-	-	-	-

ANSI/TIA/EIA-598-B Standard Fiber Color Code

Fiber Number	Fiber Color	Fiber Number	Fiber Color
Fiber 1	Blue	Fiber 7	Red
Fiber 2	Orange	Fiber 8	Black
Fiber 3	Green	Fiber 9	Yellow
Fiber 4	Brown	Fiber 10	Purple
Fiber 5	Gray	Fiber 11	Pink
Fiber 6	White	Fiber 12	Aqua

Fiber 13 and higher the color code is repeated with added black stripe or dash

Note: Fiber Tube color will be followed with same order.

Ordering Information

Part Number： OC-XX-A(B)CDCL

Ordering Guide

XX	A	B	C	D	CL
Cable Type Code	Jacket	Fiber/Per Loose Tube or Fiber/Per Sub Unit	Fiber Count	Fiber Type	Jacket Color(CL)
please see the reference below	1=PVC 2=LSZH 3=PE	2=2 Fibers/Loose Tube 12=12 Fibers/Loose Tube …… 2=2 Fibers/Sub Unit 12=12 Fibers/Sub Unit	No. Of Fiber 004F, 048F	OM1=62.5/125 OM1, OM2=50/125 OM2 OM3=50/125 OM3, OM4=50/125 OM4 OM5=50/125 OM5, G652D=9/125 G652D G655=9/125 G655, G657A1=9/125 G657A1 G657A2=9/125 G657A2, G657B3=9/125 G657B3	As noted in Color code chart

Color Code

BL-Blue	OR-Orange	GR-Green	BR-Brown
GY-Grey	WH-White	RE-Red	BK-Black
YE-Yellow	PU-Purple	PI-Pink	AQ-Aqua

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Fiber Optic Cable

1~12 Cores Indoor Fiber Optic Drop Cable (GJXFH, GJXH)

Indoor FTTH flat drop cable is a good design that has high tensile strength and flexibility in a compact cable size, which used for FTTH project solution. The optical fiber unit positioned in the center. Two parallel strength members are placed at the two sides, then the cable is completed with LSZH outer jacket. Strength member by dielectric fiber reinforced plastic (FRP) or steel wire.

It is very light in construction and easy to install, generally used for connecting Main distribution frame to consolidation point in home, apartment or offices. Industry standard connectors can be used for direct termination because of standard 250μm fiber size.
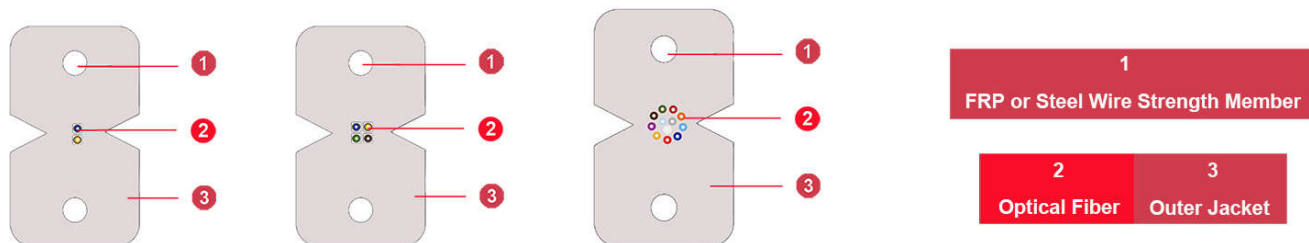
FRP Strength Member (GJXFH)

Steel Wire Strength Member (GJFH)

Cable Cross Section

1	
FRP or Steel Wire Strength Member	
2	3
Optical Fiber	Outer Jacket

Mechanical & Environmental Characteristics

Cable Type	GJXFH		GJXH	
Min. Tensile Load	Short Term: 80N	Long Term: 40N	Short Term: 200N	Long Term: 100N
Min. Crush Load	Short Term: 1000N/100mm	Long Term: 500N/100mm	Short Term: 2200N/100mm	Long Term: 1000N/100mm
Bend Radius-Dynamic	60mm (G652D), 30mm (G657A1, G657A2)		Bend Radius-Static	30mm (G652D), 15mm (G657A1, G657A2)
Outer Jacket Material	Standard: LSZH		Outer Jacket Color	Standard: White or Black
Outer Diameter (mm)	(2.0±0.1) x (3.0±0.1) mm (1~4 Cores), (2.8±0.1) x (3.8±0.1) mm (6~12 Cores)			
UL Fire Rated	OFNR		Fiber Type	G652D, G657A1, G657A2
Operating Temperature	-40°C to +70°C		Storage Temperature	-40°C to +70°C

Optical Characteristics

Charac Teristic		Condition	Unit	G657A2	G657A1	G652D
Attenuation		1310 nm	[dB/km]	≤0.36		≤0.40
		1550 nm	[dB/km]	≤0.25		≤0.30
Zero Dispersion Wavelength			[nm]	1300-1324		
Zero Dispersion Slope			[ps/(nm².km)]	≤0.092		≤0.091
Cable Cutoff Wavelength λcc			[nm]	≤1260		
Mode Field Diameter (MFD)		1310 nm	[μm]	8.4~9.2		8.7~9.5
		1550 nm	[μm]	9.3~10.3		9.9~10.9
Macro Bending Induced Attenuation	10 Turns Around a Mandrel @ 15mm Radius	1550 nm	[dB]	≤0.03	≤0.25	-
	10 Turns Around a Mandrel @ 15mm Radius	1625 nm	[dB]	≤0.1	≤1.00	-
	1 Turn Around a Mandrel @ 10mm Radius	1550 nm	[dB]	≤0.1	≤0.75	-
	1 Turn Around a Mandrel @ 10mm Radius	1625 nm	[dB]	≤0.2	≤1.50	-
	1 Turn Around a Mandrel @ 7.5mm Radius	1550 nm	[dB]	≤0.2	-	-
	1 Turn Around a Mandrel @ 7.5mm Radius	1625 nm	[dB]	≤0.5	-	-

Ordering Sample

Part Number	Description
OC-GJXFH-22G657A1WH	2 Cores Singlemode G657A1 GJXFH Drop Cable, LSZH Jacket, White Color.