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

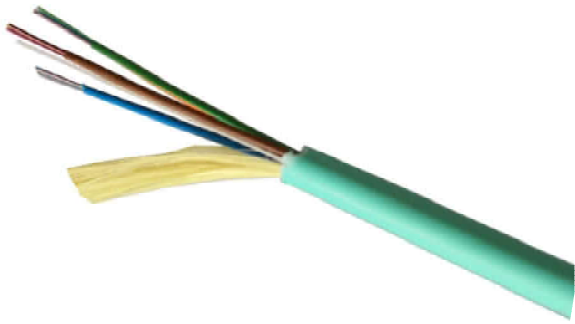
XX	A	B	C	D	CL
Cable Type Code	Jacket	Fiber/Per Loose Tube or Fiber/Per Sub Unit	Fiber Count	Fiber Type	Jacket Color(CL)
please see the reference below	1=PVC 2=LSZH 3=PE	2=2 Fibers/Loose Tube 12=12 Fibers/Loose Tube …… 2=2 Fibers/Sub Unit 12=12 Fibers/Sub Unit	No. Of Fiber 004F, 048F	OM1=62.5/125 OM1, 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

High Fiber Indoor Micro Bundle Cable (GJPFH)

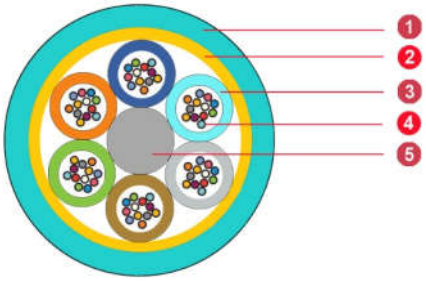
Micro bundle cables deliver high fiber strand counts in cables with very small diameters. Up to 96 strands of optical fiber in a cable with only a 9.2 mm diameter. This cable uses simplex micro bundle unit. Each micro bundle unit contains 12 fibers with a fiber diameter of 250μm. Each fiber strand is color coded for easy identification. A fiber reinforced plastic(FRP) locates in the center of core as a non-metallic strength member. Several micro- bundles are arranged around a central strength element and uses lightweight, flexible aramid yarns to enhance strength. The cable is completed with a LSZH or PVC jacket.



The watertight aramid yarns and the central strength element make the micro bundle universal design watertight, mechanical robust and suitable for installation outdoor in a duct by pulling.

The micro bundle universal complies with the indoor fire requirements. Since there is no drip effect of the very limited amount of gel the cable is optimized for both horizontal and vertical installations.

Cable Cross Section



1	2	3
Outer Jacket	Aramid Yarn	Micro Bundle Unit

4	5
Optical Fiber	FRP Central Strength

Complied with or Exceeds Standard

- IEC 60793-2-10 type A1b, TIA/EIA-492AAAA-A.
- IEC 60793-2-10 type A1a.1, TIA/EIA-492AAAB-A.
- IEC 60793-2-10 type A1a.2, ISO/IEC 11801 OM-3, TIA/EIA-492AAAC.
- IEEE 802.3z Gigabit Ethernet
- IEC 60793-2-10 type A1a.3, ISO/IEC 11801 OM-4, TIA/EIA-492AAAD.
- IEEE 802.3ae 10 Gigabit Ethernet
- IEC 60793-2-10 type Ala.4, ISO/IEC 11801 OM5, TIA/EIA-492AAAE.
- IEEE 802.3ba 40&100 Gigabit Ethernet
- ITU-T Recommendation G.652.D/G.655/G.657.A1/G.657.A2/G.657.B2/G.657.B3
- IEC 60793-2-50 type B1.3/B6.a1/B6.a2/B6.b2/ B6.b3 Optical Fiber Specification.
- ANSI/TIA/EIA 568C.3
- ROHS Compliant Directive 2011/65/EU(ROHS2.0)

Mechanical & Environmental Characteristics

Max. Tensile Load (Short Term)	660N	Max. Tensile Load (Long Term)	200N
Max. Crush Load (Short Term)	1000N/100mm	Max. Crush Load (Long Term)	300N/100mm
Bend Radius-Dynamic (mm)	20D	Bend Radius-Static (mm)	10D
UL Fire Rated	OFNR	Micro Bundle Jacket Material	LSZH or PVC
Outer Diameter (mm)	5.7mm (12 F), 6.6mm (24~48 F), 9.2mm (96 F)		
Outer Jacket Material	Standard: LSZH Optional: PVC or other		
Operating Temperature	-20°C to +60°C	Storage Temperature	-20°C to +60°C

Note: “D” is Cable Outer Diameter.

Ordering Sample

Part Number	Description
OC-GJPFH-21248OM3AQ	48 Cores Multimode OM3 GJPFH Fiber Optic Cable, 12 Fibers/Per Micro Bundle, LSZH Jacket, Aqua Color.