



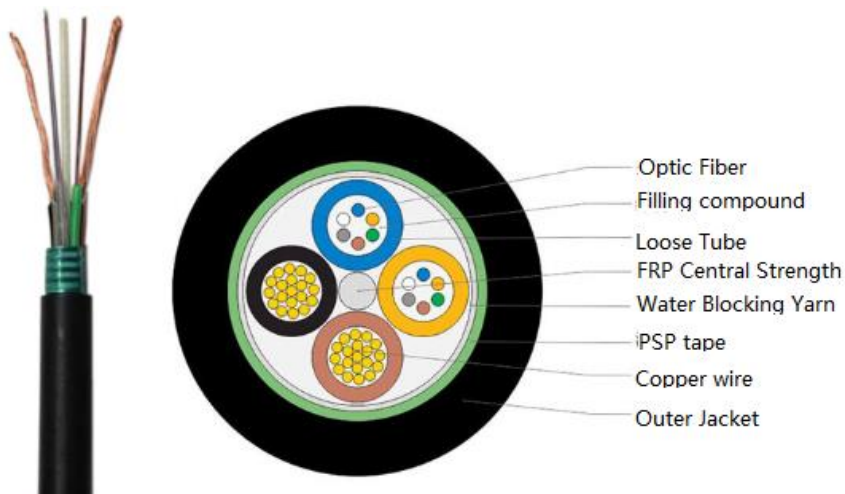
Copper and Optic Fiber Hybrid Cable

1. Reference

The cable are designed, manufactured and tested according to the standards as follows:

IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-2	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables

2. Cable Cross-section



3. Cable Identification

3.1 Fiber color code(EIA/TIA-598-A)

No.	1	2	3	4	5	6
Color	Blue	Orange	Green	Brown	Gray	White
No.	7	8	9	10	11	12
Color	Red	Black	Yellow	Violet	Pink	Aqua

4. Cable Assembly & Dimensions

Item	Contents	Value
		4*G657A2+2*Copper wire
Loose tube	Number	1
	Outer diameter (mm)	2.7±0.1
	Thickness(mm)	0.3±0.05
	Material	PBT
	Water blocking	Tube filling compound
Filler	Material	PP
	Number	1
Number of optical fibers	G657.A2	4



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Central strength member	Material	FRP		
	Diameter (mm)	2.4±0.1		
	PE layer diameter (mm)	-		
Water blocking	Material	Cable filling compound		
	Material	Water blocking tape		
Ripcord	Number	2		
Armored	Material	Corrugated Steel tape		
Sheath	Material	PE or LSZH		
	Color	Black		
	Thickness(mm)	Nominal 2.1,Minimum 1.9		
Conductor wire	Wire number	2		
	Conductor Material	Copper IEC60228 Class 5		
	Isulation Material	XPPE		
	Maximum DC resistance (at 20 °C) (Ω/km)	≤13.3	≤10.1	≤7.98
	Voltage level	300 VDC		
	Cross-section	1.5mm ²	2.0mm ²	2.5mm ²
	Maxium Usable length	≤200m	≤250m	≤300m
Cable diameter(mm) Approx.		9.0±0.5	9.7±0.5	11.0±0.5
Tensile Strength		Long term:200N Short term:600N		
Crush(/100mm)		Long term:300N Short term:1000N		
Life Span		15+ years		
Environmental Data		RoHS		
Fire resistance		IEC 60332-1		

5. Performance of Cabled Optical Fiber

The performance of cabled optical fiber (ITU-T Rec. G.657A2)

Item		Specification
Fiber type		Single mode
Fiber material		Doped silica
Attenuation coefficient	@ 1310 nm	≤ 0.35 dB/km
	@ 1550 nm	≤ 0.22 dB/km
Cable cut-off wavelength		≤ 1260 nm
Zero-dispersion wavelength		1300 ~ 1324 nm
Zero-dispersion slope		≤ 0.092 ps/(nm ² .km)
Chromatic dispersion	@ 1288 ~ 1339 nm	≤3.5 ps/(nm. km)
	@ 1550 nm	≤18 ps/(nm. km)
	@ 1625 nm	≤22 ps/(nm. km)
PMD		≤0.2 ps/km ^{1/2}
Mode field diameter	@ 1310 nm	8.6 ± 0.4 μm
Core / Clad concentricity error		≤ 0.6 μm
Cladding diameter		125.0 ± 1.0 μm



Cladding non-circularity	$\leq 1.0 \%$
Primary coating diameter	$245 \pm 10 \mu\text{m}$
Coating-Cladding Concentricity	$\leq 12 \mu\text{m}$
Coating Non-Circularity	$\leq 6.0 \%$
Core-Clad Concentricity	$\leq 0.5 \mu\text{m}$
Fiber Curl (radius)	$> 4 \text{ m}$

6. Performance of hybrid Cable

6.1 Cable bending radius: 15 x cable diameter (static)
20 x cable diameter (dynamic)

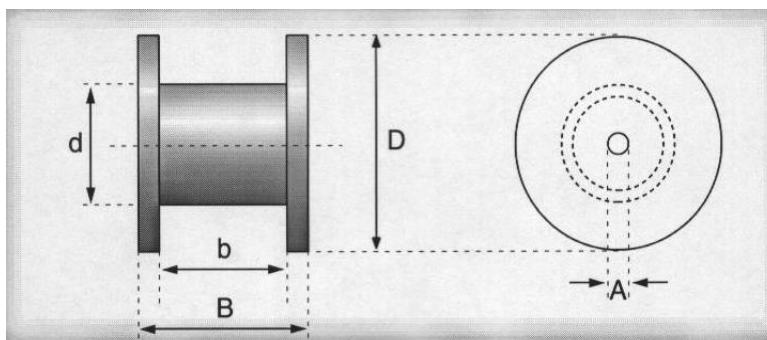
6.2 Application temperature range

Operating temperature range	: -40°C to +70°C
Storage / Transport temperature range	: -40°C to +70°C
Installation temperature range	: -30°C to +60°C

7. Packing

7. 1 Each single cable length been wound on an iron stand-wooden composite or pure wooden drum.
7. 2 Standard drum length is 1000m with $\pm 2\%$.
7. 3 Covered by plastic buffer sheet.
7. 4 Sealed by strong wooden battens.
7. 5 At least 3m of cable inner end should be reserved for testing.

Note : The value "D" contain the seal dimension.



END