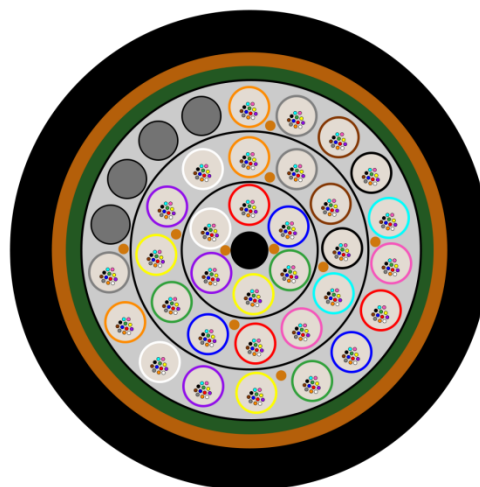


Outdoor Fiber Optic Cable

Type: OPUG 512/M16 G652D NA SJ MDPE 5kN D19.7



Application

For outdoor installation, in ducts
Fully dielectric cable
~ IEC 60793-1 - Optical fiber Part 1: Generic specifications
~ IEC 60793-2 - Optical fiber Part 2: Product specifications
~ IEC 60794-1-2 - Basic optical cable test procedures
~ ITU-T G.652 - Characteristics of a single-mode optical fiber cable

Cable Construction

~ **Central Strength Member (CSM)**- Fiber reinforced plastic rod (FRP);
~ **PBT Loose Tube** filled with a suitable water tightness compound;
~ **Optical Fibers**;
~ **Filler(s)** if needed;
~ **Longitudinal Water Tightness**: dry core with water swellable elements (water blocking yarns and tape);
~ **Aramid Yarns**;
~ **Outer Jacket** (Black MDPE);

Stranding: Loose tube and fillers, SZ stranded around CSM;

Technical Characteristics

Optical Fiber Performance - G.652D	
Characteristic	Specified Value
Attenuation Coefficient: at 1310 nm Max :	≤ 0.35 dB/km

at 1550 nm Max :	$\leq 0.22 \text{ dB/km}$
Chromatic Dispersion: between 1285 - 1330 nm: at 1550nm	$\leq 3.5 \text{ ps/nm}\cdot\text{km}$ $\leq 18 \text{ ps/nm}\cdot\text{km}$
Attenuation Non-uniformity at 1310 nm at 1550 nm	$\leq 0.03 \text{ dB}$ $\leq 0.03 \text{ dB}$
Point Discontinuity: at 1310&1550 nm	$\leq 0.1 \text{ dB}$
Polarization Mode Dispersion (PMD) PMD Q value	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$
The optical fiber core and sheath shall be of the E9 / 125 type. The protective cover must be in direct contact with the surface of the optical fiber to protect it and avoid cracking of the optical fiber	E9 / 125 type
Cable Cut off Wavelength (λ_{cc})	$\leq 1260 \text{ nm}$
Mode Field Diameter: at 1310 nm at 1550 nm	$9.2 \pm 0.4 \mu\text{m}$ $10.4 \pm 0.5 \mu\text{m}$
The uniformity attenuation at any projected wavelength	$\leq 0.1 \text{ dB/km}$
Cladding Diameter	$125 \pm 1.0 \mu\text{m}$
Mode field (Core/clad) concentricity error	$\leq 0.6 \mu\text{m}$
Cladding Non-Circularity	$\leq 1\%$
Coating Diameter	$245 \pm 7 \mu\text{m}$
Core / Cladding Concentricity error	$\leq 0.6 \mu\text{m}$
The increase in attenuation of 100 optical fiber cores wrapped on a 50 mm diameter chuck at 1310 nm: at 1550 nm:	$\leq 0.05 \text{ dB};$ $\leq 0.05 \text{ dB}$
Coating-Cladding Concentricity error	$\leq 12 \mu\text{m}$
Proof Test	$\geq 1.0\%, 1 \text{ sec.}$ $\geq 0.69 \text{ Gpa (100kpsi)}$
Temperature Cycling Induced Attenuation: at 1550nm and 1625 nm (-400C to +700C)	0.05 dB/km
Macro bending Loss : at 1550nm and 1625 nm (100 turns; Φ 60 mm)	$\leq 0.1 \text{ dB}$

Fiber Optic Cable Parameters	
Core Type *	G.652.D
Fiber Count	512
Tube Count	32
Filler Count	4
Cable Diameter (mm)	19.7
Cable Weight (kg/km)	298.0
Allowable Tensile Strength (short-term)	5.0 kN
Crush	1500 N/10cm
Water ingress resistance	1m, 24H, 3 samples
Minimum Bending Radius (Installing)	20 x D
Minimum Bending Radius (Operating)	15 x D
Temperature (Installation)	-10°C ~ +60 °C
Temperature (Transportation and Operation)	-25°C ~ +70 °C
Life Span	>30 yr
Packing	Wooden drum with protection
Delivery Lengths	To be confirmed, ± %5 tolerance
Marking	<OPTIVINE> + <OPUG 512/M16 G652D NA SJ MDPE 5kN D19.7> + <manufacturing date> + <length>

Fiber Color Identification**																
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Color	Green	Red	Blue	Yellow	Grey	Violet	Brown	Orange	White	Black	Pink	Turquoise	Green	Red	Blue	Yellow
													+ BR	+ BR	+ BR	+ BR

Tube Color Identification***																		
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Color	Green	Red	Blue	Yellow	Grey	Violet	Brown	Orange	White	Black	Pink	Turquoise	Green	Red	Blue	Yellow	Grey	Violet
													+ BS	+ BS	+ BS	+ BS	+ BS	+ BS

- * Other fiber types can be used upon request.
- ** When tubes go beyond 12 fibers, the colors repeat but black rings are used to distinguish the fibers.
- *** When cables go beyond 12 tubes, the colors repeat but black stripes are used to distinguish the tubes.
- **** Customized solutions can be offered upon request.