

Outdoor Fiber Optic Cable

Type: OPUG 192/M16 G652D NA SJ MDPE 5kN D15.3



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), covered with PE;
~ **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 : | ≤ 0.22 dB/km |
| Chromatic Dispersion: between 1285 - 1330 nm: at 1550nm | ≤ 3.5 ps/nm·km ≤ 18 ps/nm·km |
| Attenuation Non-uniformity at 1310 nm at 1550 nm | ≤ 0.03 dB ≤ 0.03 dB |
| Point Discontinuity: at 1310&1550 nm | ≤ 0.1 dB |
| Polarization Mode Dispersion (PMD) PMD Q value | ≤ 0.2 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}) | ≤ 1260 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 | ≤ 0.1 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: | ≤ 0.05 dB; ≤ 0.05 dB |
| Coating-Cladding Concentricity error | $\leq 12 \mu\text{m}$ |
| Proof Test | $\geq 1.0\%$, 1 sec. $\geq 0.69\text{Gpa}$ (100kpsi) |
| Temperature Cycling Induced Attenuation: at 1550nm and 1625 nm (-400C to +700C) | 0.05dB/km |
| Macro bending Loss : at 1550nm and 1625 nm (100 turns; Φ 60 mm) | ≤ 0.1 dB |

| Fiber Optic Cable Parameters | |
|--|---|
| Core Type * | G.652.D |
| Fiber Count | 192 |
| Tube Count | 12 |
| Filler Count | 0 |
| Cable Diameter (mm) | 15.1 |
| Cable Weight (kg/km) | 184.0 |
| 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 192/M16 G652D NA SJ MDPE 5kN D15.3> + <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.