# Low-Attenuation ITU-T G.652.D Single-Mode Communication Fiber – Full-Spectrum Transmission for Metro, FTTx, and Long-Haul Networks

## Product Overview

Winner G.652.D single-mode optical fiber is the industry-standard solution for metropolitan, access, and long-haul networks requiring cost-effective, high-capacity transmission. Engineered with a low water peak profile, it enables seamless full-spectrum operation from O- to L-band (1260–1625 nm), supporting CWDM, DWDM, and future-proof coherent transmission systems.

The fiber exhibits true zero chromatic dispersion near 1310 nm and ultra-low attenuation (⩽0.33 dB/km @1310 nm, ⩽0.20 dB/km @1550 nm), significantly reducing the need for amplification or dispersion compensation over medium distances. With polarization mode dispersion (PMDQ) < 0.2 ps/$\sqrt{}$km and stringent geometric tolerances, it ensures signal integrity for 10G/25G/100G Ethernet, OTN, and 5G transport applications.

## Technical Specifications

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| Brand Name | Winner |
| Model Number | G.652.D |
| Fiber Type | Single-Mode Communication Fiber (B1.3) |

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| Compliance | ITU-T G.652.D, IEC 60793-2-50 B1.3, Telcordia GR-20 |
| Cladding Diameter | 125 ± 1 μm |
| Coating Diameter | 245 ± 5 μm |
| Attenuation | ⩽0.33 dB/km @1310 nm<br>⩽0.31 dB/km @1383 nm (low water peak)<br>⩽0.20 dB/km @1550 nm<br>⩽0.24 dB/km @1625 nm |
| Zero-Dispersion Wavelength | 1300–1324 nm |
| Chromatic Dispersion | ≈0 ps/(nm・km) @1310 nm<br>17–20 ps/(nm・km) @1550 nm |
| PMDQ (Link Design Value) | < 0.2 ps/√km |
| Tension Screening Level | ⩾100 kpsi |
| Operating Temperature Range | -40°C to +85°C |

## Applications

- FTTx deployments (FTTH, FTTB, FTTC) for broadband access networks
- Metro aggregation and core networks supporting multi-tenant services

- Long-haul backbone links with DWDM/CWDM channel stacking
- 5G mobile transport (fronthaul/midhaul/backhaul) infrastructure
- Data center interconnects (DCI) up to 80 km without amplification

## Deployment Advantages

As the most widely deployed single-mode fiber globally, G.652.D offers unmatched compatibility with existing infrastructure, transceivers, and splicing equipment. Winner’ s version enhances this legacy with tighter attenuation control and reduced water peak, enabling efficient use of the 1383 nm window for additional CWDM channels—ideal for scalable, future-ready optical networks.