Classification of Optical Cable Trunk Lines



Overview

What are the different types of Fiber Trunk Cables?

In summary, Fiber Trunk Cables are available in various types based on their mode of transmission, core.

Key Takeaways

Optical cable trunk lines are classified based on fiber type, cable structure, and connector arrangement, with single-tube and multi-unit MPO trunk cables being the primary categories for high-density backbone networks.

Fiber Type Classification

Optical trunk lines are primarily classified by the type of fiber they use: Single-mode fibers (OS1, OS2): Designed for long-distance transmission with minimal signal loss, suitable for backbone and inter-building connections. Multimode fibers (OM3, OM4, OM5): Optimized for shorter distances and high-speed data center applications, supporting parallel optics and wavelength division multiplexing.

Structural Classification

Based on internal design, MPO trunk cables are divided into: Single-tube trunk cables: All fibers are concentrated within a single protective tube, terminated with MPO connectors. This design allows high fiber density, compact layout, and easier cable management. Multi-unit trunk cables: Comprise multiple independent fiber units (e.g., 12-fiber or 24-fiber subunits) bundled into one larger cable assembly.

© 2026 EXF OPTICAL NETWORKS - All rights reserved

This structure provides flexibility for complex deployments and high-capacity networks. Functional ClassificationMPO trunk cables are also categorized by their function: MPO Trunk Cables: Serve as backbone connections between racks, zones, or equipment rooms, supporting high-speed parallel transmission (e.g., 400G, 800G, 1. 6T) in data centers.

MP

O Breakout Cables: Shorter cables that connect equipment like servers or switches to patch panels, splitting the MPO fibers into individual connectors for direct device connections. Connector and Polarity ClassificationMPO trunk lines use standardized connector arrangements and polarity types: Connector Types: MPO connectors can carry 8, 12, 16, or 24 fibers per connector. High-density trunk cables may combine multiple connectors to support 48, 72, 96, or 192 fibers.

Polarity Types: Defined by TIA-568 standards to ensure correct transmit (Tx) and receive (Rx) mapping: Polarity A: Straight-through, 1-to-1 mappingPolarity B: Inverted/rollover, 1-to-12 mappingPolarity C: Flipped pairs, 1-to-2 mapping Ferrule Polishing: APC (angled), UPC (ultra), and PC (physical contact) types minimize back reflection and optimize performance for single-mode or multimode systems.

Applications

Optical trunk lines are widely used in: Data center backbones: Connecting Main Distribution Areas (MDA) to Equipment Distribution Areas (EDA) with high-density, high-speed links. Campus networks: Long-distance single-mode trunk lines for inter-building connectivity. High-speed parallel optics: Supporting 40GbE, 100GbE, and beyond using 8+4 or 24-fiber MPO arrangements.

Summary

In essence, optical cable trunk lines are classified by fiber type (single-mode vs multimode), internal structure (single-tube vs multi-unit), functional role (trunk vs breakout), and connector/polarity standards (MPO arrangements, APC/UPC/PC ferrules). These classifications ensure efficient, scalable, and high-performance network deployment in modern data centers and backbone infrastructures.

© 2026 EXF OPTICAL NETWORKS - All rights reserved

Article Content

What are the different types of Fiber Trunk Cables?

In summary, Fiber Trunk Cables are available in various types based on their mode of transmission, core diameter, jacket material, fire resistance, and

Fiber Optic Cable Guide: Codes, Types & Structures

Optical Cable Classification According to Application and Structure. Core/Backbone cables – Long-haul inter-provincial trunks. Metro/Relay cables – Intra-city or inter

MPO Fiber Optic Cable Types & Classification Guide

Today, we will provide a detailed explanation of the various classifications of MPO pre-terminated fiber optic cables. According to cable structure, MPO pre-terminated cables can be

Handbook Optical fibres, cables and systems

The ITU-T has published a complete set of Recommendations dealing with the above subjects: Recommen-dations of the ITU-T G-series on optical fibres and systems and Recommendations of

Fiber Optic Cable Types: Single-Mode, Multimode, and Beyond – A ...

Discover fiber optic cable types, including single-mode (OS1, OS2) and multimode (OM1, OM2, OM3, OM4, OM5), indoor/outdoor variants, and how to select the best option for data centers,

Fiber-optic cable

The identification scheme used by Corning Cable Systems is based on EIA/TIA-598, "Optical Fiber Cable Color Coding", which defines identification schemes for fibers, buffered fibers, fiber units, and

Fiber Optic Cable Types: A Complete Guide

Here''s everything you need to know about the various fiber optic cable types, what makes them so useful, and what type of fiber optic cables you want

Fiber Optic Cable Types | SMB & Campus Backbones –

Practical guide to fiber optic cable types for SMB and campus networks. Compare OS2 vs OM3/OM4 and OFNR/OFNP/LSZH ratings to easily

10 Types of Fiber Optic Cable Explained: Selection

Explore the top 10 fiber optic cable types for 400G/800G networks. From ADSS to MPO, learn technical specs, applications, and how to choose the right fiber for

© 2026 EXF OPTICAL NETWORKS - All rights reserved

Understanding the Complete Spectrum of Fiber Optic

A trunk cable is a type of fiber optic cable that can carry large amounts of data at once through a telecommunications system. It acts as the

Top US Fiber Optic Cable Manufacturers & Best Global

Looking for top fiber optic companies in the USA? We review leaders like Corning & AFL, and compare them with global OEM alternatives for AI data

unsupervised_topic_modeling/topics/en/15/50/100/topics at ...

Contribute to annontopicmodel/unsupervised_topic_modeling development by creating an account on GitHub.

Complete List of ISO/IEC Fiber Optic Cable Standards for Importers

Importing fiber cable? Don''t get stuck at customs. We explain the Standardsessential IEC 60793, 60794, and Fire Safety standards you must include in your RFQ.

Fiber Trunk Cables: The Backbone of High-Speed Connectivity

One of the essential components of modern fiber optic networks is the fiber trunk cable. These cables play a crucial role in connecting various parts of a network, ensuring high bandwidth

What is a Fiber Trunk Cable?

This includes inspecting the cable for damage, cleaning connectors, and performing periodic tests to ensure that the cable is operating within specifications. In summary, a Fiber Trunk

Fiber Optic Cable Types: A Complete Guide

The plethora of fiber optic cable types can seem overwhelming, but choosing the right cable for the job is important. Read on to learn what fiber optic

What is the definition and function of a fiber trunk cable?

A fiber trunk cable is a type of optical fiber cable specifically designed for use as the main transmission line in a telecommunication network. It serves as the backbone for high-speed data

Handbook Optical fibres, cables and systems

The simultaneous availability of compact sources and of low-loss optical fibres led to a worldwide effort for developing optical fibre communication systems. The real research phase of fibre-optic

Related Video Reference

© 2026 EXF OPTICAL NETWORKS - All rights reserved

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: https://explosivefunctions.co.za
Technical inquiry: https://explosivefunctions.co.za/contact.html
EU project coordination: Parque das Nações, Lisbon, Portugal

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 EXF OPTICAL NETWORKS - All rights reserved