

Main optical cable and branch optical cable



Overview

We take a deeper look at the different types of fiber optic cables along with the different types of connectors, terminations and jackets.

Key Takeaways

Main optical cables (trunk or feeder cables) carry the primary fiber backbone, while branch optical cables extend connections from the main line to multiple endpoints.

Main Optical Cable

A main optical cable, also known as a trunk or feeder cable, serves as the primary conduit for transmitting large volumes of optical signals across a network. These cables are typically fiber-rich, containing anywhere from dozens to over a thousand fiber strands, and are designed for long-distance, high-capacity transmission in urban, industrial, or telecom environments. Main cables are usually routed through populated areas or between central offices and distribution points, forming the backbone of the network. They are engineered for durability, environmental protection, and minimal signal loss, often with armored or reinforced sheathing for outdoor or harsh conditions.

Branch Optical Cable



A branch optical cable is a secondary cable that connects to the main optical cable via a branch box and extends the network to multiple branch lines or endpoints . Structurally, branch cables often consist of two or more single fibers bundled around a central stiffener, with reinforcement materials like aramid yarn and protective sheathing made of PVC or LSZH . They are designed for flexibility and scalability, allowing network operators to add new connections or extend service without replacing the main cable. Branch cables are widely used in cities, airports, highways, and data centers, supporting rapid network deployment and upgrades .

Key Differences	Feature	Main Optical Cable	Branch Optical Cable	Function	Backbone
transmission of high-capacity signals	Extends connections from main cable to multiple endpoints	Fiber Count	High (72-1,728 strands)	Lower (typically 2-144 strands)	Structure
Single, robust cable for long-distance	Fan-out or multi-core design with branch points	Installation	Routed through main network paths	Connected via branch boxes and junctions	Application
Feeder networks, backbone links	Distribution to local areas, branch networks, FTTH extensions	Applications in Networks			

- Main cables are used in feeder networks to carry signals from central offices to distribution points.
- Branch cables are used in distribution networks to connect the main line to individual subscribers or smaller network segments, often in FTTH (Fiber to the Home) deployments .
- Branch cables improve network flexibility, reliability, and scalability, enabling easy upgrades and expansions without disrupting the main backbone . In summary, the main optical cable forms the high-capacity backbone, while branch optical cables provide flexible extensions to reach multiple endpoints, making them complementary components in modern fiber optic networks.

Article Content

Fiber Optic Cable vs Patch Cord vs Pigtail – Complete Guide

Understand the differences between fiber optic cables, patch cords, and pigtails. Learn standards, applications, and

Fiber Optic Cable Types Explained

Our comprehensive guide to types of fiber optic cables. Learn all about the differences between single mode and multimode cables,

Subsea Cable System 101

Main functionality: to provide traffic and power routing between the trunk and branch cables, enabling reconfigurable network

Anatomy of a Cable – Optical Fiber

Here's a look at the anatomy of a fiber optic cable. Basic Construction of a Fiber Optic Cable A fiber optic cable

Fiber Optical Cabling Types and Considerations

We take a deeper look at the different types of fiber optic cables along with the different types of connectors, terminations and jackets.

Optical fiber connector

An optical fiber connector is a device used to link optical fibers, facilitating the efficient transmission of light

Fibre Optic Cable Types: A Complete Guide for Your Network

When building or upgrading a network, selecting the correct type of fibre optic cable is essential for ensuring optimal performance,

Understanding FTTH Architecture

Feeder Cables – These cables are the main cable(s) being routed through a populated area. Assemblies are normally fiber-rich,

Fibre Optic Cable & Connector Guide

This white paper is designed to help you select the right kind of fibre optic cable. It should also help you in understanding the various

Optical Cables

The following section refers to both optical cables that constitute a part of AOC cables as well as standalone optical

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

