Fiber Optic Patch Cord End Face Shape



Overview

SOPTO A deep-dive into the technology of fiber patch cords. Learn about Single-mode vs. Multimode, LC/SC/MPO connectors, UPC/APC polish types, and critical.

Key Takeaways

Fiber optic patch cords have three main end face shapes: PC (Physical Contact), UPC (Ultra Physical Contact), and APC (Angled Physical Contact), each affecting signal reflection and insertion loss differently. Overview of End Face ShapesPC (Physical Contact): The end face is slightly convex, allowing the fiber cores to make physical contact and reduce air gaps. This design improves signal transmission compared to flat-end connectors and typically achieves a return loss of around -40 dB.

P

C connectors are widely used in telecom equipment and standard indoor networks.

UP

C (Ultra Physical Contact): UPC connectors feature a more pronounced dome-shaped convex end face, polished with extended techniques for a smoother surface. This reduces reflections further, achieving a return loss of approximately -50 dB.

UP

C connectors are commonly used in Ethernet, digital, and indoor singlemode applications where low back-reflection is important.

AP

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C (Angled Physical Contact): APC connectors have an 8° angled end face, which directs reflected light into the fiber cladding rather than back to the source. This significantly improves return loss, typically around -60 dB, making APC ideal for high-speed systems, CATV, and applications sensitive to back-reflection.

AP

C connectors are usually green, while PC/UPC connectors are blue. Key DifferencesFeaturePCUPCAPCEnd Face ShapeSlightly convexDome-shaped convex8° angled bevelReturn Loss~ -40 dB~ -50 dB~ -60 dBReflection DirectionBack to sourceBack to sourceInto claddingCommon ApplicationsTelecom, indoor networksEthernet, digital, indoor singlemodeCATV, FTTx, WDM, high-speed systemsConnector ColorBlueBlueGreenCompatibilityCompatible with UPCCompatible with PCNot compatible with PC/UPCPractical ConsiderationsInsertion Loss: All three types typically have insertion loss below 0. 3 dB, but UPC and PC are easier to achieve low insertion loss due to smaller air gaps.

Compatibility: PC and UPC connectors can be mated together, but APC connectors must never be connected to PC or UPC, as this can damage the fiber end face and degrade performance. Selection: Choose APC for applications sensitive to return loss, such as FTTx or high-wavelength CATV systems.

UP

C is suitable for general indoor networks where cost and moderate performance are acceptable.

P

C is largely legacy but still used in some telecom equipment. Understanding these end face shapes ensures optimal network performance, minimizes signal reflection, and prevents damage to fiber optic connectors.

Article Content

A Guide to Fiber End Face Shape and Polish

Explore the critical differences between UPC, APC, and expanded beam fiber end face shapes and polishes. Learn how geometry impacts signal

Standard Fiber Patch Cables Datasheet

They have the characteristics of low insertion loss, high return loss, bending resistance, and strong stability, which fully meet the requirements of optical connection performance in harsh

Fiber Optic Patch Cord Guide: Types, Connectors

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Structurally, UPC connectors have a flat end face, while APC connectors have an angled end face (usually 8 degrees). This angled design

How to Distinguish the Ferrule of the Patch Cord?

Learn how to distinguish between PC, APC, and UPC ferrules in fiber optic patch cords. Our guide explains how to identify them for optimal network performance.

APC, UPC, PC Fiber Connector Types Comparison and

End Face Structure - The basic difference between UPC vs PC is the structure of the end face of fiber connectors. The PC connector features an

Standard Fiber Patch Cables Datasheet | FS

Fiber optic patch cables are ideal for supporting high speed telecommunication network fiber applications. They are manufactured and tested in compliance with TIA 604 (FOCIS), IEC 61754 and

APC vs UPC vs PC: Fiber Connector End Face & Polishing Guide

Learn the key differences between APC vs UPC vs PC fiber connectors: end-face shape, return loss, polishing types, compatibility rules, and how to choose the right one.

FIBER PATCH CABLES DATASHEET

For premium grade, ferrule geometry is tested on all patch cords to meet these requirements. Other than standard single mode and multimode fibers, G655, OM2, and OM3 fibers are also available upon

Differences between the 3 Common End-face Types

In order to allow better contact between the end faces of two optical fibers, the ferrule end faces of fiber optic patch cords are usually ground into different

Fiber optic patch cord face cleaning and maintaining complete guide

Cleaning of fiber optic patch cord end faces For fiber jumpers that are frequently plugged and unplugged, it is recommended to perform end-face inspection and cleaning before and after

A Guide to Fiber End Face Shape and Polish

PC end faces were polished into a subtle convex shape, improving fiber core contact and significantly reducing reflections. It was the primary end

Endface Inspection for Fiber Connectors and Patch Cords

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HOLIGHT Fiber Optic designs passive fiber components, such as patch cords and pigtail sets, to be compatible with standard endface inspection

Fiber Optic Patch Cord Guide: Types, Connectors

Confused about fiber optic patch cords? Learn the differences between single mode and multimode, LC vs SC vs MPO connectors, and how to

Acceptable and Unacceptable Fiber Connector End-Face Finishes

Sopto supply fiber optic patch cords with good quality fiber optic connectors, like LC, ST, FC, SC and so on. For the newest quotes, please contact a Sopto representative by calling 86-755-36946668, or by

A Breakdown of Fiber Optic Patch Connectors and Their Applications

Most Common Fiber Optic Connectors - Full Breakdown with Examples Written by Ben Hamlitsch, trueCABLE Technical and Product Innovation Manager RCDD, FOI In the world of copper

Fiber Optic Patch Cords Guide | Types, Connectors

Explore fiber optic patch cords for telecom, data centers, and FTTH. From LC/SC to MPO/MTP and armored jumpers, ZION Communication offers

Ferrule and endface Geometry

hing fiber optic connectors. PC -the first way, means slightly oval shape which is perpendicular towards connection axis, and the other-APC, in which the ferrule''s end face height and an apex of-fset. Not to

How to Distinguish the Ferrule of the Patch Cord?

In fiber optic cabling, there are usually scenarios where two fiber optic jumpers or jumpers are connected to devices. The industry has introduced grinding and polishing technology to allow

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