

Direct-connection cable optical module



Overview

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

Key Takeaways

Direct connection cables, including DAC and AOC, provide high-speed, short-distance links between optical modules or network devices without the need for separate transceivers. Types of Direct Connection Cables

1. Direct Attach Copper (DAC) Cables DAC cables are pre-terminated copper cables that connect two optical modules directly. They are cost-effective for short distances (typically up to 7 meters) and are available in passive and active versions. Passive DACs are simpler and cheaper, while active DACs include signal conditioning for longer reach and higher reliability .
2. Active Optical Cables (AOC) AOCs are fiber-based cables with integrated transceivers at each end. They support longer distances than DACs (up to 100 meters or more) and are suitable for high-speed connections like 40G, 100G, or 400G. AOCs are plug-and-play and reduce the need for separate optical transceivers .
3. MTP/MPO Cables For high-density environments, MTP/MPO multi-core fiber cables are used. These cables can connect multiple fibers in a single interface, supporting parallel transmission for high-speed modules. They come in trunk cables for main links and breakout cables to split multi-core connections into single or dual-core connectors for direct module connections .

Connector Types and Compatibility

- LC, SC, MPO/MTP are common connectors. LC is widely used for 1G-25G modules, SC for older 1G systems, and MPO/MTP for high-density 100G-400G modules .

- Wavelength and fiber type must match the optical module: multimode fibers (OM3/OM4) typically operate at 850nm, while single-mode fibers (OS2) operate at 1310nm or 1550nm .
 - Vendor compatibility is important; some network equipment requires vendor-specific EEPROM information, but third-party DACs and AOCs are often tested to work reliably with multiple vendors .
- Application Recommendations
- Use DACs for short-distance, cost-sensitive connections within racks.
 - Use AOCs for longer distances or when reducing electromagnetic interference is important.
 - Use MTP/MPO cables in data centers for high-density, high-speed parallel connections.
 - Always ensure fiber type, connector type, and module speed match to avoid signal loss or link failure . By selecting the appropriate direct connection cable based on distance, speed, and module type, you can achieve reliable, high-performance optical links while optimizing cost and installation efficiency.

Article Content

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AOC, DAC, ACC, AEC Modules: The most Complete Overview

There are various connection solutions available for switching networks, such as optical modules + optical fibers,

Small Form-factor Pluggable

Using a simple adapter or a special direct-attached cable, it is possible to connect those interfaces together using just

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Optical module

Optical modules typically have an electrical interface on the side that connects to the inside of the system and an optical interface on

Active Optical Cable (AOC) Connection Solutions

The appearance of Active Optical Cable (AOC) is quite similar to that of Direct Attach Cable (DAC), but they differ in

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L-com provides a wide variety of fiber optic cables in multiple configurations. We offer specialized fiber optic cable assemblies in

Comparing AOC, DAC, ACC, and AEC Cables for AI and Data Center

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In this new Technology Moment, we share with you a practical overview of how to use the SFP ports of Unifi switches

Everything You Need to Know About Optical Modules

Optical transceivers are the primary components of optical modules responsible for transmitting and receiving optical

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The SFP+ direct attach passive copper cables are ideal for indoor telecommunications and data networks using our routing 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,

DAC/AOC vs. Transceivers with Fiber Optic Cables: What's the

What is the Optical Transceiver with Optical Fiber Cable Solution? Explanation of Optical Modules with Fiber Cables

What Is An Optical Module?

An optical module is a small device that moves data using light. It changes electrical signals into light signals and back

The Key External Components of Optical Modules

An optical module serves as the backbone of modern fiber-optic communication. Its appearance often resembles a

How to Connect Fiber Optic Cables to SFP Modules | Weunion Guide

In high-speed data networks, the seamless integration of fiber optic cables with SFP (Small Form-Factor Pluggable)

What is a Direct Attach Copper (DAC) Cable?

What is a DAC (or Direct Attach Copper) Cable? In simple terms, a DAC has modules at either end of a ~26-28 AWG

Compatible SFP+ Modules and Cables for Intel® Ethernet Server

SFP+ optical module, SFP module, and direct attach cable requirements for the Intel® Ethernet Converged Network

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