

DAC High-Speed Cable Classification



Overview

Common DAC Cable Types 10G to 800G: DAC vs AOC vs AEC Learn what DAC is and how to classify common data center DAC cables by connector, speed, and breakout.

Key Takeaways

DAC (Direct Attach Copper) cables come in passive and active forms, supporting speeds from 10Gbps to 100Gbps with SFP+, QSFP+, and breakout configurations. Main Categories of DAC Cables

1. Passive DAC Cables Passive DAC cables are simple twinax copper cables without any active electronics. They rely solely on the copper wiring to transmit data, making them cost-effective, energy-efficient, and low-latency. They are typically used for short distances, usually up to 5-7 meters, and are ideal for rack-to-rack or top-of-rack switch-to-server connections in data centers . 2. Active DAC Cables Active DAC cables include signal conditioning electronics such as amplifiers and equalizers. These components extend the effective range of the cable, allowing reliable connections up to 10-15 meters or more. Active DACs are more expensive but provide better signal integrity and are suitable for environments with higher crosstalk or electromagnetic interference .

Speed-Based Variants

- 10G DAC Cables: Commonly used for 10 Gigabit Ethernet connections, available in both passive and active forms. Ideal for short-range connections within a rack or between adjacent racks .



- **25G DAC Cables:** Support 25Gbps data transfer, often used in modern high-performance data centers.
- **40G DAC Cables:** Typically use QSFP+ connectors and can be passive or active. They are suitable for switch-to-switch or switch-to-server connections over short distances .
- **100G DAC Cables:** Designed for ultra-high-speed networking, supporting massive data transfers in large-scale data centers. Available in both passive and active variants .

Connector and Configuration Types

- **SFP+ to SFP+:** Standard 10G connections, often used within a single rack.
- **QSFP+ to QSFP+:** Supports 40G connections, commonly used for high-speed switch interconnects .
- **Breakout Cables:** Convert a single high-speed port into multiple lower-speed ports, e.g., a QSFP+ (40G) to four SFP+ (10G) ports. This allows splitting bandwidth efficiently without additional hardware .
- **Mixed Transceiver Cables:** Some DACs connect devices with different transceiver types, such as SFP28 (25G) to SFP34 (40G), providing flexible high-speed connectivity .

Summary

DAC cables are high-speed, short-range copper solutions that simplify network deployment by integrating transceivers into the cable ends. Choosing between passive and active, selecting the appropriate speed, and considering connector type are key factors for optimizing data center performance and cost-efficiency .

Article Content

DAC, AEC, AOC, and ACC High-Speed Data Transmission Cable Guide

Currently, four mainstream types of data transmission cables dominate the market: DAC (Direct Attach Cable), AEC

DAC Cable Encyclopedia

It is a cable assembly with fixed connectors at both ends, usually purchased in fixed lengths, and is divided into two

High-Speed Direct Attached Cable (DAC) Assemblies

Molex High-Speed DAC Assemblies deliver a complete zSFP+ and zQSFP+ interconnect solution across multiple industry standards

Common classifications and models of DAC high-speed cables

This high-speed cable can be used to realize the interconnection of existing 40G QSFP+ ports to 40G QSFP+ ports, generally only

What Makes a DAC Cable Different from Other Network Cables

A DAC, or direct attach cable, stands out from other network cables because of its twinaxial copper cable construction and factory

DAC Cable Encyclopedia

In data centers, short-distance, high-speed, and high-reliability interconnection transmission is required between

What is high speed cable and what are its advantages?

High Speed Cables As a low-cost alternative to optical modules for short distance connections, it is widely used in data centre

Siemon DAC & AOC High Speed Cable Assembly

The goal of this technical reference is to provide guidance for understanding the compatibility of various high speed cable assembly

What Is DAC Cable?

This passage tends to introduce the common DAC cables and their applications for high-density high-speed gigabit ethernet

Direct Attach Cable (DAC) Assemblies

Direct Attach Cable (DAC) Assemblies High-speed I/O passive cable assemblies that can deliver data rates as high as 400 Gbps

Cisco DAC Direct Attach Cable Model Guide

DAC Direct Attach Cables, also known as high-speed cables or direct attach copper cables, are typically purchased in

How To Choose DAC High-speed Cable?

DAC high-speed cables can be divided into 10G SFP+ DAC high-speed cables, 25G SFP28 DAC high-speed cables, 40G QSFP+

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