

RIVO MULTITRADE OPTICAL SYSTEMS

What type of fiber optic cable is used for a 100G optical module



Overview

Arista supports a full range of 100G copper cables and optical transceivers compliant to IEEE standards and industry MSAs.

Key Takeaways

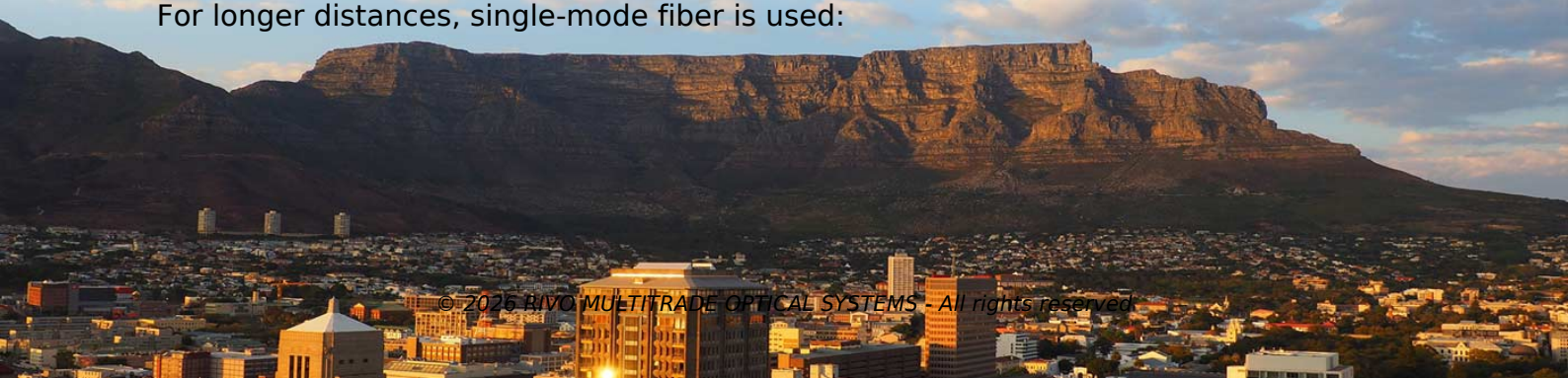
100G optical modules can use either multimode fiber (OM3, OM4, OM5) or single-mode fiber (SMF), depending on the transceiver type and required reach. Multimode Fiber (MMF)

For short-reach 100G connections, multimode fibers are commonly used:

- OM3: Supports up to 70-100 meters for SR4 or BiDi 100G modules using QSFP28 form factor with MPO or duplex LC connectors .
- OM4: Extends reach up to 100 meters for SR4 or BiDi modules, also compatible with QSFP28 and SFP56-DD modules .
- OM5: Designed for wavelength-division multiplexing (WDM) over multimode fiber, supporting similar distances as OM4 but with multiple wavelengths for future-proofing . Connector types for MMF include MPO/MTP for parallel optics (SR4) and duplex LC for BiDi modules .

Single-Mode Fiber (SMF)

For longer distances, single-mode fiber is used:



- 100G-DR1 (500 m), 100G-FR1 (2 km), 100G-LR1 (10 km): These modules operate over SMF using a single wavelength per lane, typically with duplex LC connectors .

- SMF is preferred for inter-data center links or long-haul connections due to lower attenuation and higher reach.

Active Optical Cables (AOCs)

For intra-rack or short inter-rack connections, 100G QSFP28 AOCs combine electrical and optical components in a single cable, converting electrical signals to optical signals for high-speed transmission over short distances (typically within racks) with duplex LC connectors .

Summary

- Short-reach (up to 100 m): Multimode fiber (OM3, OM4, OM5) with MPO or duplex LC connectors.

- Medium to long reach (500 m to 10 km): Single-mode fiber (SMF) with duplex LC connectors.

- Intra-rack or short interconnects: Active Optical Cables (AOCs) with embedded transceivers. Choosing the correct fiber type depends on the transceiver module, distance, and network architecture. For example, SR4 modules use 8-fiber parallel MMF, while BiDi modules use 2-fiber duplex MMF, and DR/FR/LR modules use SMF for longer distances .

Article Content

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Fiber type and reach—The fiber type specifies the type of optical fiber (single-mode or multimode) compatible with 100G

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Fiber type and reach—The fiber type specifies the type of optical fiber (single-mode or multimode) compatible with

Fiber-optic communication

An optical fiber patching cabinet. The yellow cables are single-mode fibers; the orange and blue cables are multi-mode fibers:

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A 100G transceiver is an optical module transmitting and receiving data at 100 gigabits per second. It converts electrical

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QSFP-100G-SR4-S The QSFP-100G-SR4-S module supports 100GBASE-SR4 Ethernet over link lengths of up to 100m over parallel

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100G optical modules, also known as a 100G transceiver, is a compact and sophisticated device utilized in fiber-optic communication

Arista 100G Transceivers and Cables: Q&A

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Single-mode optical fiber

In fiber-optic communication, a single-mode optical fiber, also known as fundamental- or mono-mode, is an optical fiber designed

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A clear guide to fiber infrastructure for your 25G/40G/50G/100G upgrade. Learn about SMF, MMF, transceivers, and

Optical fiber connector

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

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Explore the different types of fiber optic cables and understand which type suits your specific needs for speed, distance,

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

100G Transceivers and Cables

100G Transceivers Guide 100G QSFP28 transceivers are high-speed, compact optical transceivers designed for data centers,

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The 100G BiDi transceiver refers to the QSFP28 single-mode fiber bidirectional optical module applied to 100G Ethernet. Each

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