Agent for Single-Fiber Bidirectional 40G



Overview

It enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors.

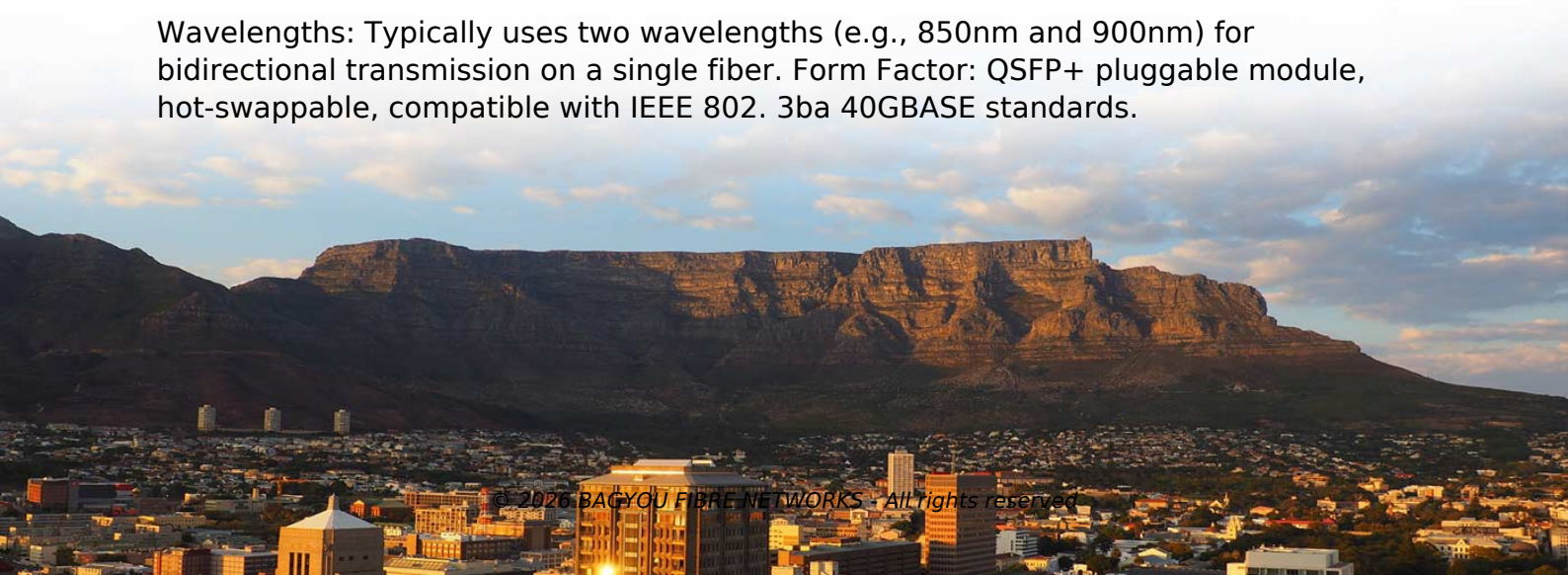
Key Takeaways

Single-fiber bidirectional (BiDi) 40G QSFP+ transceivers enable 40GbE transmission over just one fiber pair, optimizing fiber usage while maintaining full 40Gbps performance. OverviewSingle-fiber BiDi 40G transceivers, such as the QSFP-40G-SR-BD or YXF-QP-M85L-01D, are designed for short-reach, high-speed data center interconnects using multimode fiber (MMF) and LC connectors. Unlike traditional 40G SR4 modules that require eight fibers and MPO connectors, BiDi modules transmit and receive signals simultaneously on a single fiber pair, reducing cabling complexity and fiber consumption.

Key Features

Bandwidth: 40Gbps total, achieved via four 10Gbps channels multiplexed into two 20Gbps electrical channels. Fiber Type: Multimode fiber (OM3 or OM4), supporting distances up to 100 meters on OM3 and 150 meters on OM4. Connectors: Standard LC duplex connectors, allowing reuse of existing 10G LC cabling infrastructure.

Wavelengths: Typically uses two wavelengths (e.g., 850nm and 900nm) for bidirectional transmission on a single fiber. Form Factor: QSFP+ pluggable module, hot-swappable, compatible with IEEE 802. 3ba 40GBASE standards.



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Advantages

Fiber Efficiency: Reduces fiber usage by 50% compared to SR4 modules, which is critical in high-density data centers. Simplified Cabling: Eliminates the need for MPO connectors and complex parallel fiber arrangements.

Cost-

Effective Upgrades: Enables seamless migration from 10G duplex links to 40G without replacing existing LC cabling.

Short-

Reach Optimization: Ideal for Top-of-Rack to aggregation switch links and other intra-data center connections.

Deployment Considerations

Compatibility: Ensure the switch or router supports QSFP+ BiDi modules and the required 40GbE ports. Distance Limitations: Best suited for short-reach applications; longer distances may require SR4 or CWDM solutions. Fiber Infrastructure: Works with existing multimode LC duplex fiber, making it suitable for data centers with limited fiber resources.

SummarySingle-fiber bidirectional 40G QSFP+ transceivers provide a high-performance, fiber-efficient solution for upgrading data center networks to 40GbE. They maintain full 40Gbps throughput while halving fiber requirements, simplifying cabling, and enabling cost-effective network expansion. These modules are particularly valuable in environments where fiber availability is limited or where existing LC cabling infrastructure is already deployed.

Article Content

Cisco 40GBASE QSFP Modules Data Sheet

This module can be used for native 40G optical links over 12-fiber ribbon cables with MPO/MTP connectors or in 4x10G mode with parallel-to-duplex fiber breakout cables for connectivity

Cisco 40GBASE QSFP Modules Data Sheet

It enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. It can also be used in a 4x10G mode for interoperability with 10GBASE

QSFP 40G SR BD: 40G QSFP+ BiDi Transceiver Explained

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Summary: QSFP-40G-SR-BD is a fiber-saving 40G solution that combines short-reach multimode operation with bidirectional signaling. It sits between traditional SR4 and LR4 modules, offering

40G QSFP+ Transceiver Modules | Optical

FS 40G QSFP+ optical transceiver module solutions offer a full range of QSFP+ modules from 150m to 80km reach, and used for high-density switching, routing

Comprehensive Guide of QSFP-40G-SR-BD Bidi Transceiver

This article introduces the definition, technical specification, application, working principle, selection advice and difference with 40G SR4 transceivers.

The Essential Guide to BiDi Transceivers: Everything You Need to Know

BiDi transceiver, a compact optical transceiver with WDM (wavelength division multiplexing) technology and SFP multi-source protocol (MSA) compliance, allows fast data

40G BiDi QSFP+: Single-fiber Bidirectional Transmission

The YXFiber ''s YXF-QP-M85L-01D transceiver internally multiplexes the XLPP| 4x10G interface into two 20Gb/s electrical channels, and uses bidirectional optical fibers for optical

QSFP-40G Universal Transceiver

The Arista QSFP-40G Universal transceiver is a pluggable optical transceiver in an industry standard QSFP+ form factor that can operate with both duplex multi-mode and single-mode fiber.

What is QSFP-40G-SR-BD Optical Transceiver, Everything You

It uses a clever bidirectional communication setup over a single fiber strand, making it perfect for short distances. Operating in the wavelength range of 832 to 918 nanometers, it supports

40G QSFP+ TRANSCEIVERS | Smartoptics

Long-range single-mode QSFP+ – Enables reliable 40G transmission up to 10 kilometers over single-mode fiber with LC connectors, suitable for metro and regional networks.

40G BiDi QSFP+: Single-fiber Bidirectional Transmission

The interfaces of optical modules are mainly divided into single-fiber bidirectional BiDi and dual-fiber bidirectional (Deplux). In the wavelength division multiplexing system, the line transmission

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40G BiDi QSFP+ 150m MMF | Two-Fiber | EDGEOPTIC

EDGEOPTIC 40G BiDi QSFP+ transceiver: 150m OM4 multimode fiber, 850/900nm wavelengths, 2dB link budget, 41.25 Gbps. Two-fiber 40G solution, 0-70°C.

40G Parallel & Bidirectional Optical Transceiver Introduction

With the 40G QSFP being the dominant transceiver form factor used for 40GbE applications, the IEEE standard 802.3ba released several 40-Gbps based solutions in 2010,

Single-Fiber Bidirectional Transmission using 400G ...

We experimentally evaluate the Rayleigh Back-Scattering power penalty in a single-fiber single-wavelength bidirectional link using coherent digital subcarrier-based transceivers and verify a ...

FS 40G QSFP BiDi Transceiver Solution

As to the migration from 10G to 40G, this article will introduce a cost-effective solution — 40G quad small form-factor plugable (QSFP) bidirectional (BiDi) transceiver solution.

What is QSFP-40G-SR-BD Optical Transceiver, Everything You

This article will describe what the QSFP-40G-SR-BD is and will also detail the benefits of this module and how it works. It will also explain whether you should choose QSFP-SR4-40G or

QSFP+ 40G LR4 Explained: Your Ultimate Guide to 40G Long-Reach

The “40G” denotes its data rate of 40 gigabits per second, while “LR4” stands for Long Reach 4-lane. It''s specifically engineered to transmit data over single-mode fiber (SMF) for distances

How to TAP 40/100G BiDi connections

Therefore, the responsible parties prefer to use technologies that can build on the existing base. BiDi Module approach To efficiently migrate from 10G to 40G or 100G over short distances on

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